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ABSTRACT

This paper analyzes data from an annual survey of high school seniors for racial and ethnic differences in the use of licit and illicit drugs. Data from 14 nationally representative surveys of high school seniors from 1976 through 1989 are used. The surveys, conducted in 130 schools polling 17,000 students each year, are described. Throughout the period, Native Americans had the highest prevalence rates for use of illicit drugs except cocaine, for frequent use of alcohol, and for use of cigarettes. White students had the next highest prevalence rates for most drugs. Asian Americans had the lowest prevalence rates, Black students had prevalence levels nearly as low, except for marijuana, and the Hispanic groups were mostly in the intermediate ranges, except for a relatively high prevalence of cocaine use among the males. Trend patterns for most forms of drug use have been similar across subgroups, with the following two notable exceptions: (1) cocaine use increases somewhat more than average among Hispanic seniors and less than average among Black seniors; and (2) the proportions smoking cigarettes have declined more sharply among Black than among White seniors, resulting in greater Black-White differences in recent years. Multivariate analyses indicate that subgroup differences in drug use cannot be attributed to background factors such as family composition, parents' education, region, or rural-urban distinctions. Study data are presented in 20 tables. A list of 51 references is included. (Author/JB)

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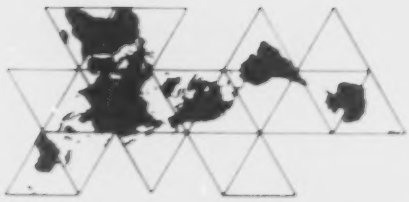

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DRUG USE AMONG BLACK, WHITE, HISPANIC, NATIVE AMERICAN, AND ASIAN AMERICAN HIGH SCHOOL SENIORS (1976-1989): PREVALENCE, TRENDS, AND CORRELATES

Jerald G. Bachman
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Monitoring the Future: A Continuing Study of the Lifestyles and Values of Youth

As its title suggests, this study is intended to assess the changing lifestyles, values, and preferences of American youth on a continuing basis. Each year since 1975 about 17,000 seniors have participated in the annual survey, which is conducted in some 130 high schools nationwide. In addition, subsamples of seniors from previously participating classes receive follow-up questionnaires by mail each year.

This Occasional Paper Series is intended to disseminate a variety of products from the study, including pre-publication (and somewhat more detailed) versions of journal articles, other substantive articles, and methodological papers.

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DRUG USE AMONG BLACK, WHITE, HISPANIC, NATIVE AMERICAN, AND ASIAN AMERICAN HIGH SCHOOL SENIORS (1976-1989): PREVALENCE, TRENDS, AND CORRELATES

Monitoring the Future Occasional Paper 30

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ABSTRACT

This paper reports racial/ethnic differences in the use of licit and illicit drugs, using data from fourteen nationally representative surveys of high school seniors from 1976 through 1989. Throughout the period, Native Americans had the highest prevalence rates for use of illicit drugs except cocaine, for frequent use of alcohol, and for use of cigarettes; White students had the next highest prevalence rates for most drugs. Asian Americans had the lowest prevalence rates, and Black students had prevalence levels nearly as low, except for marijuana. Prevalence rates for the Hispanic groups were mostly in the intermediate ranges, except for a relatively high prevalence of cocaine use among the males. Trend patterns for most forms of drug use have been similar across subgroups, with two notable exceptions: (1) cocaine use increased somewhat more than average among Hispanic seniors and less than average among Black seniors, (2) the proportions smoking cigarettes have declined more sharply among Black than among White seniors, resulting in greater Black-White differences in recent years. Multivariate analyses indicate that subgroup differences in drug use cannot be attributed to background factors such as family composition, parents' education, region, or rural-urban distinctions.

INTRODUCTION

This report is issued during a time of increased interest in the nature and extent of drug use among non-White youth. The findings, which cover the high school classes of 1976 through 1989, come from an ongoing national research project entitled Monitoring the Future: A Continuing Study of the Lifestyles and Values of Youth.[1] This report is the first publication that presents Monitoring the Future data for racial/ethnic subgroups beyond the two largest categories--those seniors who identify themselves as White and those who identify themselves as Black.

The report is divided into four sections plus appendices. In Section I of the report we briefly review the literature reporting drug use among the various racial/ethnic groups. In Section II we present recent data (based on the senior classes of 1985 through 1989) on the lifetime, annual, thirty-day and daily prevalence of drug use separately for male and female high school seniors in each of the following categories: White, Black, Native American, Asian American, Mexican American, and those from Puerto Rican and other Latino backgrounds. In Section III we examine trends in drug use for each of the above subgroups, beginning with data from the classes of 1976-1979. In Section IV we report results of multivarate analysis of racial/ethnic differences in drug use with key background and lifestyle factors controlled.

Because the Monitoring the Future project was not specifically designed to study racial differences, a number of issues must be considered when interpreting the statistical results contained in this report. These issues include the representativeness of the Monitoring the Future sample, differential response tendencies of White and non-White youth, and the internal validity of students' responses. We address each of these important issues in the appendices to this report.

We must stress that the findings presented in this report are based on national samples of high school seniors. Thus, the samples do not include those young people who drop out of high school before the end of their senior year. Because the dropout rates among Black, Hispanic and Native American youth are higher than the national average of 15%-20%, these youth are proportionally underrepresented in the Monitoring the Future samples. Moreover, the samples do not contain those students who were absent on the days that the surveys were administered.

Clearly, adolescent drug use in individual neighborhoods and cities may be far greater or far less than the national rates presented here. The national results presented in this study

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[1]The project is conducted by the University of Michigan's Institute for Social Research, and is funded primarily by the National Institute on Drug Abuse. This analysis and reporting was supported by NIDA Research Grant R01 DA 01411

provide a picture of drug use as it exists among the total high school senior population, but cannot be taken as representative of drug use in any distinct locale.

Why a Special Report on Racial/Ethnic Subgroups?

In light of the complexities in interpreting racial differences in prevalence of drug use, one might ask why we chose to publish the statistics for racial subgroups at all. After considerable deliberation, we concluded that the expected benefits of making these data available (along with the cautionary section of this report) outweigh the risks that they will be misinterpreted. There is clearly a need for baseline data on the drug use of our nation's non-White youth; unfortunately, because these non-White racial/ethnic groups constitute relatively small proportions of the American population, their numbers in most surveys are too few to justify being characterized separately. The sample sizes in the present report are large in comparison to most, thus providing sufficient numbers of cases to publish data on these subgroups separately. Again, we must emphasize caution in interpreting the results presented in this study and encourage the reader to pay particular attention to the limitations of this research. Despite this caveat, we do believe that we have a fairly accurate national picture of the drug use of non-White high school seniors.

Background Information: Monitoring the Future

Two major purposes of the Monitoring the Future project are to develop an accurate picture of current prevalence of drug use among the nation's youth and to document recent trends in such use. As we have noted elsewhere, "Having a reasonably accurate picture of the basic size and contours of the problem of illicit drug use among young Americans is a prerequisite for rational public debate and policy making. In the absence of reliable prevalence data, substantial misconceptions can develop and resources can be misallocated. In the absence of reliable data on trends, early detection and localization of emerging problems are more difficult, and assessments of the impact of major historical and policy-induced events are much more conjectural" (Johnston, O'Malley, and Bachman, 1989, p. 4).

The basic research design for the Monitoring the Future project has been described extensively by Bachman and Johnston (1978); see also Johnston et al. (1989). Key features of the design and procedures are summarized briefly below.

Samples. A three-stage sampling procedure is employed (Kish, 1965), with stage 1 the selection of particular geographic areas, stage 2 the selection of one or more high schools in each area, and stage 3 the selection of seniors within each high school. The result each year is an area probability sample of the 48 coterminous states. About 130 high schools participate each year (approximately 118 public and 12 private). About 83 percent of the sampled seniors generally participate (nearly all nonparticipation results from absenteeism), yielding samples of about 17,000 seniors each year.

Statistical Significance and Confidence Intervals. The use of samples clustered into a limited number of geographic areas and schools is highly efficient and cost-effective; however, it does result in somewhat larger sampling errors than would occur with simple random samples of equivalent numbers of students. Confidence intervals and significance of differences are estimated by dividing the actual numbers of cases by an appropriate design effect, and then employing standard statistical procedures which assume simple random sampling. Based on extensive estimates, we have incorporated the following design effects in the present analyses: 8.0 for White males and females, 3.0 for Black males and females, 2.2 for all other male and female subgroups.(A further discussion of design effects is included in Appendix B.)

The procedure outlined above yields confidence intervals which vary greatly depending upon sample size and percentage size. As examples and general guidelines we note the following: The largest 95 percent confidence intervals around percentages are 1.7 percent for Whites, 2.8 for Blacks, 3.7 for Mexican Americans, and 6.3 for Native Americans (the smallest subgroup). Any Black-White difference equal to or exceeding 3.0 percent is significant at the 95 percent level. It would be unnecessarily cumbersome to specify significance levels for every subgroup comparison discussed herein; instead, we have adopted the convention of describing in the text as differences only those which exceed the 99 percent confidence level.

Survey Procedures. Data are collected via questionnaires administered in classrooms by locally based Institute for Social Research representatives and their assistants, following carefully standardized procedures. The questionnaires are designed for optical scanning; all items are closed-ended. Five different questionnaire forms have been used each year, with each administered to a random one-fifth of the sample.

Measures. The use of alcohol and the use of each of the illicit drugs are measured by questions having the following format: On how many occasions (if any) have you used [name of drug category]...

a) ...in your lifetime?
b) ...during the last 12 months?
c) ...during the last 30 days?

Seven response categories are available: 0 occasions, 1-2, 3-5, 6-9, 10-19, 20-39, 40 or more occasions. Annual and monthly prevalence refer to any use of the specific substance during the last 12 months, or the last 30 days, respectively. "Daily prevalence," as used here, refers to use on 20 or more occasions in the last 30 days. An additional question about heavy use of alcohol asks respondents how many times in the last two weeks they had five or more drinks in a row. Cigarette use is measured by a question which asks about use in the past 30 days (none, less than 1 cigarette per day, 1-5 cigarettes per day, about 1/2 pack per day, about 1 pack per day, about 1 1/2 packs per day, 2 or more packs per day). There is a good deal of inferential data in support of the validity of such self-report measures of drug use, summarized elsewhere (Johnston et al., 1989; Johnston & O'Malley, 1985; Johnston, O'Malley, & Bachman, 1984; O'Malley, Bachman, & Johnston, 1983; Malvin & Moskowitz, 1983; Smart & Jarvis, 1981).

The measure of racial/ethnic identification is based on the questionnaire item: "How do you describe yourself? 1. American Indian, 2. Black or Afro-American, 3. Mexican American or Chicano, 4. Puerto Rican or other Latin American, 5. Oriental or Asian American, 6. White or Caucasian, 7. Other."

Analysis Strategy. Our analysis examined data from 14 surveys, representing the senior classes of 1976 through 1989. As has been documented in detail elsewhere (National Institute on Drug Abuse [NIDA], 1988; Johnston et al., 1989), drug use among young people has shown a number of important shifts during this period. Such shifts must be taken into account in the present report; however, our primary emphasis is upon racial/ethnic subgroup differences, especially those which have been somewhat consistent across time and thus are likely to continue at least into the near future. In order to reflect broad changes over time, while also providing sufficient numbers of subgroup cases and sample points, we combined senior classes into three groups: 1976-79, 1980-84, and 1985-89. The resulting numbers of cases for the total samples and the racial/ethnic subgroups are displayed in Table 1.

As Table 1 indicates, the proportions of Whites in the samples decreased from the late seventies to the mid-eighties, whereas the proportions of Asian Americans and Hispanics increased substantially. These changes are generally parallel to shifts in the overall population of youth, although it should be kept in mind that the proportions in our samples reflect some substantial subgroup differences in high school dropout rates, as well as other differences (including a somewhat higher rate of missing data for several of the non-White subgroups). In particular, it should be noted that nationwide dropout rates for Blacks have declined in recent years, and are now only slightly higher than those for Whites (National Center for Education Statistics [NCES], 1989).

Table 1.
Racial/Ethnic Distribution of the Monitoring the Future Combined Samples*

	1976-1979		1980-1984		1985-1989	
	N	%	N	%	N	%
White	48993	85.0	62157	82.0	57864	78.7
Black	5965	10.4	8958	11.8	8187	11.1
MexAm	1088	1.9	1480	2.0	3117	4.2
PR & LA	572	1.0	1105	1.5	1392	1.9
AsianAm	439	.7	1139	1.5	1899	2.6
NatAm	563	1.0	933	1.2	1068	1.5
Total	57620	100.0	75772	100.0	73527	100.0

* The multistage sampling design with respondents clustered in schools produces larger sampling errors than would a simple random sample of equivalent size. For statistics in the present paper the estimated design effects are 8.0 for White males and females, 3.0 for Black males and females, and 2.2 for the males and females in any of the other groups. Frequencies used to calculate statistical significance are equal to the actual number of cases shown in the table divided by the appropriate design effect (i.e., 8.0, 3.0, or 2.2). When referring to group differences the term "significant" or "significantly" refers to $p < .01$.

SECTION I: LITERATURE REVIEW

Overview

Although there is a fairly large literature on adolescent drug use, very little of this work focuses on the drug use of adolescents in the various racial/ethnic minority groups. National data and trend data on their drug use have been especially limited. Because the nation is undergoing dramatic demographic shifts, and the non-White groups are rapidly becoming the majority in many areas, it seems especially important to examine and monitor the drug use of these significant and growing portions of our population.

This section briefly reviews past research on substance use among Black, Hispanic, Asian American, and Native American adolescents. The studies included in this review are based primarily upon large, representative samples of adolescents (youth 18 years old and under). This review does not include many studies which compare race differences in licit and illicit drug use based on small, non-representative samples.

Unfortunately, researchers have employed a variety of different drug use measures, thus making it difficult to compare results directly across studies. Additionally, most past research on drug use among non-White youth focuses primarily on alcohol, so information on use of illicit drugs is limited. Despite these limitations, some fairly consistent findings have emerged from past research on the drug use of Black, Hispanic, Asian American, and Native American youth, and these are summarized in the following sections.

Black Adolescents

Early studies of Black adolescents typically compare the substance use of Black youth with that of White youth. These studies indicate that Black youth are more likely than White youth to abstain from alcohol use, and the Black youth who drink do so less often and experience lower rates of problem drinking than do their White counterparts (Blane and Hewitt, 1977). Very little large scale survey research in the past focused on the drug use of Black youth in the general population, and thus we must rely on more recent efforts to examine their drug use behavior. (For a more recent review see Prendergast, Austin, Maton, & Baker, 1989.)

In a large, representative sample of New York state 7-12th grade students, Kandel, Single, and Kessler (1976) found that Black students were less likely than White students to report any lifetime use of hard liquor (59% versus 68%), beer or wine (77% versus 84%), or marijuana (26% versus 30%). Black students were also less likely than Whites to report any lifetime use of illicit drugs such as LSD, barbiturates, amphetamines, and tranquilizers. Black and White students were about equal in reported lifetime use of cigarettes (74% versus 73%) and cocaine (4% versus 3%). Black students were more likely to report heroin use than were White students (7% versus 2%).

Wilsnack and Wilsnack (1978) used a national sample of over 13,000 high school students to determine the percentage of students who used alcohol, the number of alcohol related problems these students experienced, and the degree to which the students exhibited symptomatic drinking characteristics (e.g., drinking in the morning, drinking alone, memory recall problems). They analyzed their data by the students' grade in school, sex, and ethnicity. Less than half (44%) of the 11th-12th grade Black females in the sample reported that they were drinkers versus two-thirds (68%) of the White females in the same age group. The Black females also reported a lower mean number of drinking problems and symptomatic drinking characteristics than did the White females. Wilsnack and Wilsnack found similar race differences between Black and White males. Black males were less likely than White males to report that they were drinkers (63% versus 80%). Additionally, Black males reported a lower mean number of drinking problems than did White males.

In a recent representative sample of 27,335 New York state 7-12th graders, Welte and Barnes (1987) compared the amount of alcohol, the extent of heavy drinking, and the average number of alcohol related problems of White, Black, West Indian, Asian American, Hispanic, and Native American students. The Black and West Indian students reported the lowest per capita alcohol use, the lowest percentage of heavy drinkers, and the fewest times drunk per month. Fifty-nine percent of the Black students and 61% of the West Indian students reported that they used alcohol, compared to 76% of the White students. Black and West Indian students also reported lower lifetime use of illicit substances than did Whites and the other racial subgroups included in the sample. The Black and West Indian students reported a mean lifetime use of drugs 19 and 16 times respectively, while their White counterparts reported a mean lifetime use of 27 times.

Generally, the males within each racial subgroup reported higher alcohol and illicit substance use than did the females, although the sex differences were relatively small among Whites. Sixty-four percent of the Black males versus 54% of the Black females, 69% of the West Indian males versus 55% of the West Indian females, and 79% of the White males compared to 74% of the females reported that they currently used alcohol. The mean frequencies of lifetime use of illicit drugs by Black, West Indian, and White males were 22, 22, and 29 times, respectively, while among females the corresponding means were 15, 12 and 26 times.

Although fewer Black and West Indian students reported that they used drugs, compared with White students, those Black and West Indian students who did use drugs were more likely to report drug related problems. Black students were more likely than West Indian or White students to report that they experienced difficulties as a result of their substance use (e.g., trouble with teachers, friends, or police because of drinking, or attending class drunk). For example, the Black students reported 5.9 alcohol related problems per month for each ounce of absolute alcohol consumed per day, but West Indian youth experienced 3.8 problems per month, and White youth experienced only 2.2 problems. Closer analysis of problems related to substance use revealed that these problems were particularly concentrated among the females. The Black and West Indian females reported higher mean numbers of alcohol related problems than the White females and the other race and sex groups included in the study. On average, the Black

females experienced 8.5 problems per month (per ounce of alcohol consumed), and the West Indian females experienced 5.2 problems per month, compared to only 2.0 problems per month among the White females. This finding leaves open the issue of whether the drinking among Black females results in more behavioral problems or whether the reaction of those in their social environment is simply stronger than that experienced by White females when they drink.

In another analysis on the same sample of New York state students, Barnes and Welte (1986) performed a discriminant function analysis to distinguish between those students who drank and those who abstained. The analysis revealed that on average, Black students abstained from any alcohol use more often than White students. Further analysis indicated that Black students who used alcohol drank less than their White counterparts, even after controls for sex, age, school misconduct, grades, parental attitudes about children drinking, age of first drunkenness, and the proportion of friends who got drunk weekly.

Data from the 1988 National Household Survey confirm earlier findings that Black youth are less likely than White youth to use most licit and illicit drugs (NIDA, 1990). A national sample of 10th-12th grade students found that Black students used alcohol and drank heavily less often than White students (Lowman, Harford, & Kaelber, 1983). Eighty-three percent of the Black youth reported any lifetime alcohol use, compared to 89% of the White youth. Additionally, Blacks students were more likely than White students to report that they (currently) abstained from any use of alcohol. Forty-one percent of the Black females and 34% of the Black males reported that they abstained, while only 20% of the White males and 18% of White females abstained. Although Black students used alcohol considerably less than White students, they used marijuana at a more comparable rate. Fifty-five percent of the White males and 57% of White females reported that they used marijuana at least once in their lifetime, whereas 51% of the Black males and 47% of the Black females used marijuana at least once.

In an earlier article (Bachman, Johnston, & O'Malley, 1981) we reported that Black students used cigarettes, alcohol, marijuana, and other illicit drugs less frequently than their White counterparts, and that these differences remained even after controls for various aspects of background (e.g. sex, parents' education, urbanicity) and lifestyle (e.g., religious commitment, number of evenings spent out with friends).

All of the studies reviewed above used samples of students. Because drug use is known to be higher among those youth who drop out of school, and those who are frequently absent, the results of these studies probably slightly underestimate the drug use of high school age youth in the general population. Moreover, because the dropout rate is higher among Blacks than Whites, student samples are likely to underrepresent drug use among Black adolescents in the total population. (However, several of the studies cited here used comparison of students in grades 7 through 12, which should result in less differential dropout rates than our own survey of seniors.) Household surveys, which include dropouts and absentees, provide one potential way to determine if Black youth in the general population use alcohol and drugs less than do their White counterparts, even though larger percentages of Blacks drop out of high school.

Data from the 1985 National Household Survey on Drug Abuse indicate that Black youth (ages 12-17) scored significantly lower than White youth on an index of substance abuse which measured incidence of drunkenness, marijuana use, and cocaine use (Robbins, 1989). Robbins (1989) estimated separate regression models for alcohol, marijuana, and cocaine use and found that Black respondents were less likely to have been drunk or to have used marijuana or cocaine than were their White counterparts even when sex, age, past year substance use, and sex by drug interaction effects are controlled.[2]

A national telephone survey of 1003 teenagers aged 13-18 years found that more Black youth than White youth abstained from any alcohol use (Zucker & Harford, 1983). The majority of the Black students (53%) reported that they abstained, but only 38% of the White students reported abstaining. Among those Black students that used alcohol, 15% reported that they drank moderately to heavily; among White users, 31% reported that they drank moderately to heavily.

Hispanic Americans

The limited amount of data on Hispanic youth, and the historical and cultural diversity within the Hispanic population, make it more difficult to draw any firm conclusions about their use of alcohol or other drugs. The comprehensive review of the literature by Blane and Hewitt (1977) found only two studies with large subsamples of Hispanic youth. More recent research is discussed below and in the review by Austin and Gilbert (1989).

The study of New York state 7th to 12th grade students conducted by Kandel et al. (1976) included over 500 Hispanic students. The students in this sample used hard liquor, beer or wine, and cigarettes less than White students. For example, 50% of the Hispanic students reported that they used hard liquor versus 68% of White students, 65% reported that they had used beer or wine versus 84% of White students, and 60% reported that they had smoked cigarettes versus 73% of White students. Fewer Hispanic than White students reported that they had used any of the illicit drugs except heroin (5% Hispanic youth versus 3% White youth) and cocaine (6% Hispanic youth versus 3% White youth).[3]

A national sample of 7-12th grade students which included over 1200 Hispanic youth found that, in general, Hispanic youth drank at levels fairly comparable to White youth (Wilsnack & Wilsnack, 1978). A slightly larger percentage of the 11th-12th grade Hispanic males were drinkers (84%) than were 11th-12th grade White males (80%). Conversely, a smaller percentage of Hispanic females were drinkers (54%) than were White females (68%). However, looking just at the 11th-12th grade males and females, Hispanics drank less often than White youth, and reported fewer drinking problems and fewer instances of symptomatic drinking.

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[2]All age groups, not just adolescents, were included in the regressions.

[3]These percentages only indicate whether students have ever used the drugs in their entire lifetime; actual frequencies or levels of use were not reported.

The study of New York state 7-12th graders conducted by Welte and Barnes (1987) included 2,329 Hispanic students. Generally, the Hispanic students' reported levels of alcohol and drug use were less than those reported by White students, though greater than those reported by Black students. In the total sample, 63% of the Hispanic youth reported that they were drinkers compared to 76% for White youth. Among those that drink, 12% of the Hispanic students were classified as heavy drinkers compared to 21% of the White students. Hispanic males were more likely than Hispanic females to drink (67% versus 59%) and to drink heavily (17% versus 7%), and males reported being drunk more times per month. The illicit drug use of Hispanic youth closely paralleled that of White youth. The Hispanic students used illicit drugs an average of 26 times in their lives, and White youth used them an average of 27 times. Hispanic males reported about the same amount of lifetime illicit drug use as White males (means of 30 times and 29 times respectively), but Hispanic females reported a lower mean amount of lifetime illicit drug use than did White females (21 times versus 26 times).

An earlier study by Barnes and Welte (1986) demonstrated that Hispanic youth were more likely to report that they abstained from any alcohol use than were their White counterparts (37% versus 24%). Those Hispanic students who used alcohol reported slightly higher mean levels of daily alcohol consumed than Whites; however, no significant difference remained after controls were introduced for age, sex, school misconduct, age at first drunkenness, parents' attitude about children drinking, students' number of school misconduct incidents, grades, and proportion of friends that get drunk.

As shown in Figure A, the dropout rate for Hispanics has remained substantially higher than the rate for Whites; accordingly, student samples are likely to underestimate substance use for the total population of Hispanic youth. Again, we will turn to data from national household surveys to provide perhaps more accurate estimates of the overall prevalence of alcohol and drug use.

Data from the 1985 National Household Study on Drug Abuse indicate that Hispanic youth scored lower than White youth, but higher than Black youth, on an additive index of past year recreational substance use, a substance abuse index, and a drug problem index (Robbins, 1989; Robbins & Clayton, 1989). These results are fairly consistent with the other studies that found that Hispanic youth use alcohol and drugs at an intermediate level that is less than White youth and greater than Black youth (NIDA, 1990).

Gilbert and Alcocer (1988) criticize past research on Hispanic adolescents drug use which typically homogenizes the distinct Hispanic groups (e.g., Mexicans, Puerto Ricans, Cubans). The authors note that although these groups share the Spanish language and some cultural traits, they do not share a common history or important demographic or socioeconomic characteristics; accordingly, studies that present information for Hispanics as a homogeneous group are inadequate. We acknowledge this inadequacy, and in the present report we are able to disaggregate our Hispanic population into two groups: (1) Mexican American youth, and (2) Puerto Rican American and other non-Mexican Latino youth.

Native Americans

Because Native Americans constitute a small fraction of the nation's population, somewhat concentrated in reservations in the southwestern states, national studies typically include very few adolescents from this segment of the population. Nevertheless, the few early studies that did include Native American youth found that these youth exhibited the highest rates of alcohol use of any population subgroup (Blane & Hewitt, 1977). These youth have been found to exhibit relatively high rates of illicit substance use as well (Austin, 1988).

The study by Kandel et al. (1976) of New York state White and non-White 7-12th graders surveyed in 1971 also included a very small sample of Native American youth (N=48). The Native American youth in that study reported higher rates of drug use than any other racial/ethnic subgroup for every licit and illicit drug except heroin. Almost 75% of the Native American youth reported that they had tried hard liquor versus 68% for White youth. The Native American students also used other substances at a higher rate than Whites, including beer or wine (96% versus 84%), cigarettes (93% versus 73%), marijuana (40% versus 30%), hashish (31% versus 23%), LSD (22% versus 9%), barbiturates (23% versus 13%), cocaine (13% versus 3%) and heroin (5% versus 2%).

In their national sample of 7th-12th grade students Wilsnack and Wilsnack (1978) found that Native American youth (N=909) were somewhat less likely than White youth to report that they drank. A smaller percentage of the 11th-12th grade Native American males were drinkers (72%) than were 11th-12th grade White males (80%), and a smaller percentage of Native American females were drinkers (61%) than were White females (68%). Native American 11th-12th grade females also drank slightly smaller amounts of alcohol than White females in the same age group, but they were more likely than White females to experience drinking problems and to exhibit symptomatic drinking characteristics. On the other hand, Native American 11th-12th grade males drank more than White males, experienced more drinking problems, and exhibited more symptomatic drinking characteristics than their White counterparts.

Welte and Barnes' (1987) study of New York state 7-12th graders included 135 Native American youth. They had the largest percentage of heavy drinkers (19% versus 16% for Whites) and the highest mean number of times drunk per month (8.5 times versus 6.1 times for Whites). When sex was controlled, it became apparent that both alcohol and drug use were particularly heavy for Native American males. These males had a slightly larger percentage of drinkers of all of the race and gender subgroups (80% versus 79% for White males) and the highest proportion of heavy drinkers among those that drink (37% versus 27% for White males). Although a fairly large percentage of Native American females reported that they drank (67%) it is lower than among White females (74%). In addition to their high rates of alcohol use, the Native American youth also had the highest mean lifetime use of illicit drugs (76 times for Native American males versus 29 times for White males and 33 times for Native American females versus 26 times for White females).

Despite fairly high rates of alcohol and drug use among Native American youth, Barnes and Welte (1986) found that Native American youth abstained from alcohol use at a rate similar to White youth (27% versus 24%). Further analysis indicated that among Native American youth that drank, consumption rates did not differ significantly from rates for their White counterparts, even after controls were introduced for sex, age, school misconduct, grades, parental attitudes about children drinking, age of first drunkenness, and the proportion of friends that got drunk weekly. Again we must note that the Native American sample was very small (n=135) and based only on New York state; accordingly, both the validity and generalizability of the results must be viewed with caution.

The results of studies of Native American 7th-12th graders conducted in schools on reservations by Oetting and Beauvais (1982) are fairly consistent with national studies that show widespread use of alcohol, marijuana, cigarettes and other illicit drugs among Native American youth. The most recently published data (collected in1986-1987) reveal that 81% of the students had used alcohol, 61% had used marijuana and 78% had used cigarettes at least once in their lifetime (Beauvais, Oetting, Wolf, & Edwards, 1989). A quarter of the students reported use of inhalants (24%), and a similar proportion reported use of stimulants (25%), while smaller but still important percentages reported use of cocaine (8%) and heroin (5%). Overall, the rates of use for all drugs increased between the 1975 and 1981 surveys but declined between 1982-85 and then rose slightly in 1986-87. For example, in 1975 41% of the students reported that they had ever used marijuana, in 1977-78 this percentage increased to 53%, and by 1980-81, 74% of the students reported that they had used marijuana. In 1982-83 the percentage of students that had used marijuana decreased to 70% and by 1984-85 the percentage decreased even further to 57%. By 1986-87 there was a slight increase in the proportion of students that had used marijuana to 61%. (Beauvais et al., 1989).

In the earlier study by Oetting and Beauvais (1982), Native American students of both sexes reported similar rates of lifetime use and use within the last thirty days for most drugs except cocaine and cigarettes. More males reported lifetime use of cocaine (10% versus 6%), but more females reported use of cigarettes (82% versus 75%). When Beauvais et al. (1989) compared their Native American sample with Monitoring the Future national samples of high school seniors for lifetime drug use, and drug use in the last 30 days, they found that the Native American youth used all drugs except cocaine at higher rates. These differences were particularly pronounced for recent (last 30 days) use of marijuana (37% versus 23%) and use of cigarettes (38% versus 30%).

Asian Americans

Although there is not an extensive literature on the drug use of any of the non-White groups considered in this review, perhaps the least exists on the drug use of Asian American youth. Blane and Hewitt's (1977) comprehensive review of the literature yielded only three studies that examined the drinking behaviors of Asian American youth. Since their review some

empirical research has been completed on Asian American youth and substance use, but the data are still limited. (For a more recent review see Austin, Prendergast, & Lee, 1989).

Kandel et al.'s (1976) study of New York state youth included a very small number of Asian American youth (n=63) as well as White, Black, Native American, and Hispanic youth. The Asian American students in the sample reported the lowest use of hard liquor, wine or beer, and cigarettes. Only 18% of them reported that they had ever tried hard liquor, versus 68% of the White students. Greater proportions of the Asian American students reported that they had used beer or wine (53%), and cigarettes (39%), than used hard liquor, but they still used considerably less than did their White counterparts (84% beer or wine, and 73% cigarettes).

In their national sample of 7th-12th grade students Wilsnack and Wilsnack (1978) found that Asian American youth (N=206) diverged considerably by sex in their use of alcohol. Drinking was reported by a larger percentage of Asian American males than by any other gender/racial group. Almost 90% of the Asian American males said they drank compared to 80% for White males. Asian American females, on the other hand, were the group least likely to report that they drank -- only 43%, compared with 68% of the White females. Asian American females also scored lower than White females on an alcohol quantity-frequency measure, experienced fewer drinking related problems, and showed fewer symptomatic drinking behaviors than did White females. Conversely, Asian American males reported that they drank more often in larger amounts than White males, had more drinking related problems, and showed more traits of symptomatic drinking.

Welte and Barne's (1987) study of New York state 7-12th graders included 524 Asian American youth. These youth showed the lowest percentage of drinkers of any racial/ethnic group. Only 45% of the Asian American youth reported that they drank, whereas 76% of the White students did so. Though the Asian American students, as a group, showed low rates of alcohol use, there were large differences between Asian American males and females in reported use of licit and illicit drugs. On average, Asian American male drinkers consumed more alcohol per day than every other gender/racial group except Native American males. Additionally, Asian American male drinkers reported the greatest number of times drunk per month. Nonetheless, when the researchers classified respondents as heavy drinkers (based on self-reports of amounts consumed), only 12% of Asian American males were considered heavy drinkers (versus 21% of White males). The Asian American males also reported relatively high mean numbers of illicit drug uses (a mean of 42 times, versus 29 times for Whites males). Conversely, Asian American females reported the lowest proportion of drinkers (41% versus 74% for White females), the lowest rate of heavy drinking (0% versus 10% for White females), the least number of times drunk per month (1.5 times versus 5.2 times for White females) and the smallest mean number of lifetime illicit drug use experiences (9 versus 26 times for White females).

In another analysis of the same sample of New York state students, Barnes and Welte (1986) found that Asian American youth were much more likely than White youth to report that they abstained from alcohol use. Over half of the Asian American youth (55%) reported that they did not drink, whereas only one-fourth (24%) of the White youth did not drink. When

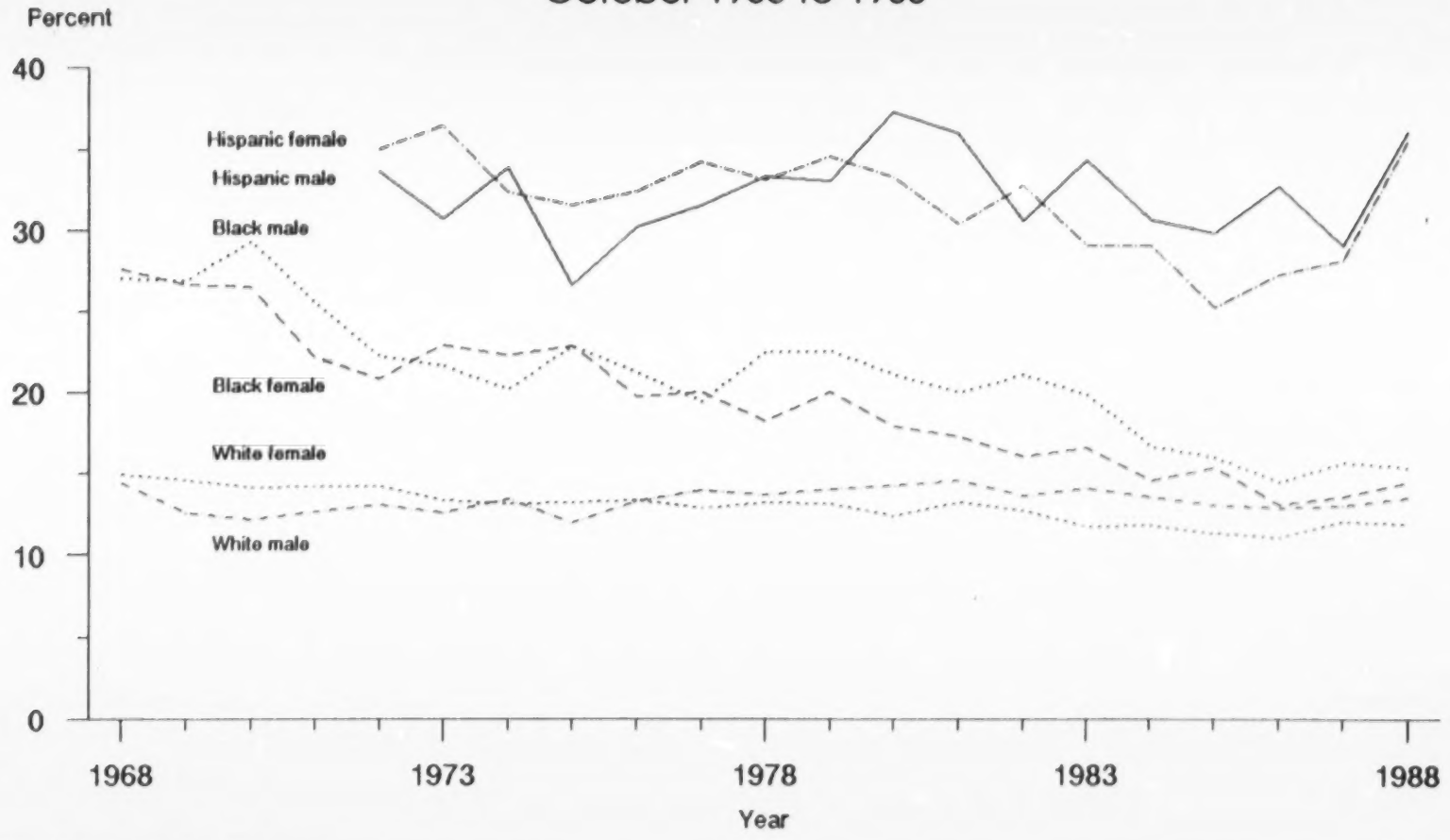
various factors including students' sex, age, school misconduct, grades, parental attitudes about children drinking, age of first drunkenness, and the proportion of friends that got drunk weekly, were controlled, the Asian American youth remained more likely to be abstainers, and their overall mean levels of drinking (based on the total sample, not just drinkers) were also lower than those of Whites.

Summary

This review has focused on the drug use of non-White adolescents. The existing literature on the substance use of non-White youth has several shortcomings. There are only minimal amounts of information on dropouts, delinquents, inner-city youth (for exceptions see Brunswick, 1980; Brunswick, Merzel, & Messeri, 1985; Dembo, Burgas, DesJarlais, & Schmeidler, 1979; Dembo, Farrow, Schmeidler, & Burgas, 1979; Kandel, 1975), or students that are chronically absent. These omitted groups are likely to exhibit higher rates of substance use and abuse than their student counterparts. We also know that Black, Hispanic and Native American youth are more likely to drop out than are their White counterparts; consequently, they are typically more underrepresented in student samples.

Despite the aforementioned shortcomings, some fairly consistent findings on subgroup differences in the use of licit and illicit drugs can be summarized as follows: Asian American females (but not necessarily males) tend to report very low amounts of drug use relative to the other groups, and this is particularly true for alcohol. Black youth consistently report lower rates of drug use than White youth. Hispanic youth typically report more substance use than Blacks and only slightly less than Whites. Native American youth on average report greater use of alcohol and other drugs than any other subgroup. It is reassuring to note that this summary of previous findings is generally consistent with our own findings, as detailed in the next section.

Figure A. Status dropout rate, ages 16-24, by race/ethnicity by sex: October 1968 to 1988



Note: Hispanics may be of any race.
Source: U.S. Department of Commerce, Bureau of the Census, "School Enrollment–Social and Economic Characteristics of Students, October (various years)." Current Population Reports, Series P-20, and unpublished tabulations.

This table from National Center for Education Statistics (1989). *Dropout rates in the United States: 1988.* (NCES Analysis Report) p.15.

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SECTION II: PREVALENCE OF DRUG USE BY SEX AND RACIAL/ETHNIC GROUP

Drug prevalence data have been computed separately, by gender, for each of the seven racial/ethnic group categories which were introduced in Table 1. Findings based on the combined classes of 1985 through 1989 are presented in Tables 2-5. (Tables presenting data from the combined classes of 1976 through 1979, and from the combined classes of 1980 through 1984, are located in Appendix C.) In this section we focus our comments on the most recent data, although in most respects the key findings are consistent across all time periods. In Section III we report some instances in which there are subgroup differences in trends.

Marijuana

Among males, lifetime prevalence of marijuana shows moderate differences among the subgroups, as shown in Table 2. With the exception of Asian Americans (29%), roughly half of the males in each subgroup report having made some use of this drug. Among females, lifetime prevalence rates are generally lower than those for males; however, among Native Americans, female rates are slightly (but not significantly) higher than male rates, and among Whites, female rates are nearly as high as male rates.

Annual prevalence rates for marijuana, shown in Table 3, are highest among Native American females and males, and nearly as high among White males and females, and Mexican American males. Annual prevalence rates are somewhat lower for Mexican American females, Puerto Rican and other Latin American males, and Black males. The lowest annual prevalence rates are reported by Puerto Rican and other Latin American females, Black females, and Asian American males and females.

Monthly and daily (or near daily) prevalence rates for marijuana are, of course, lower than annual rates. The subgroup distinctions remain much the same as for annual prevalence except that male-female differences are more pronounced (Tables 4 and 5). Within the Black and Hispanic subgroups, monthly prevalence rates for males are nearly double those for females; the male-female differences in monthly prevalence are smaller within the Native American, White, and Asian American subgroups. Sex differences in daily use are even more pronounced; within each racial/ethnic subgroup, daily use is much less prevalent among females than among males. Also, daily marijuana use is distinctly higher among Native Americans than among any of the other subgroups.

Cocaine

Although cocaine is much less widely used among high school seniors than marijuana, substantial proportions of those in the classes of 1985-89 used this drug at some time (Table 2). Annual prevalence rates (Table 3) are highest, and nearly the same, for Native Americans (males

and females) and males in both Hispanic groups, but significantly lower for Hispanic females. Annual prevalence rates for Whites are fairly similar to those for Hispanics, except that the difference is somewhat smaller between males and females. Compared with each of the above groups, annual prevalence rates for cocaine use are significantly lower for Blacks and Asian Americans. In the case of Asian Americans, prevalence for males and females is essentially the same; however, for Blacks, like Hispanics, the prevalence is about twice as high for males as for females.

Monthly prevalence of cocaine use (Table 4) is much lower than annual prevalence; fewer than half of those seniors who reported any use in the past 12 months also reported use in the past 30 days (representing less than 5 percent of the total sample). But here, as in the case of daily marijuana use, we find that the subgroup difference patterns are, if anything, more pronounced. Specifically, monthly prevalence is more than twice as high for males as for females among Hispanics, and twice as high among Blacks; the sex differences are smaller among Whites, and slightly (but not significantly) in the opposite direction for both Native Americans and Asian Americans.

Other Illicit Drugs

Tables 2 through 4 provide details on a number of other illicit drugs: inhalants, hallucinogens, heroin, other opiates, stimulants, sedatives, and tranquilizers (any use under doctor's orders is excluded). For most drugs, and most subgroups, fewer females than males report use. For most drugs, usage rates are highest for Native American seniors and lowest for Black and Asian American seniors. Differences among White and Hispanic seniors are generally smaller and not consistent across these other illicit drugs.

Alcohol

Large majorities of seniors in all subgroups have used alcohol sometime during their lifetime (Table 2), and also during the past year (Table 3). Nearly two-thirds of all seniors used alcohol within the past 30 days (Table 4). There are substantial subgroup differences in these annual and monthly prevalence rates; in particular, use among White and Native American males and females is relatively high, while among Black and Asian American seniors only about half of the males and one-third of the females report use of alcohol during the past month. The more important subgroup differences, however, involve frequent or heavy use of alcohol.

Among the statistics on alcohol use by high school seniors, the one of greatest importance from a public health perspective involves consumption of five or more drinks in a single sitting. As shown in Table 5, almost half of White and Native American males report such heavy alcohol use once or more during the two weeks preceding the survey, and the rate is nearly as high for Mexican American males. Instances of heavy drinking are significantly less prevalent among

Puerto Rican and other Latin American males, and even lower among Black males and Asian American males.

Racial/ethnic differences in heavy drinking among females parallel those for males, but at distinctly lower prevalence levels. Specifically, among Black, Hispanic, and Asian American seniors such heavy drinking is only about half as prevalent among females as among males; however, among White and Native American seniors the sex differences are not as pronounced. It is worth noting that physiological factors no doubt contribute to the particularly large sex differences observed here. Although consumption of five drinks (about three ounces of alcohol) is likely to have a very substantial impact on the typical male high school senior, the effect on the typical female is even more dramatic (due to differences in weight and ability to metabolize alcohol).

Relatively few seniors drink alcohol on a daily or near daily basis (i.e., 20 or more times during the past 30 days). Nevertheless, this behavior shows subgroup differences which parallel those for heavy drinking, as can be seen in Table 5. Prevalence rates are highest for Native American seniors, nearly as high among Mexican American and White seniors, and distinctly lower for the other groups. For each of these groups, daily drinking is about two to four times as likely among males as females.

Cigarettes

About two-thirds of all seniors have tried cigarettes sometime in their lives (Table 2); however, the much more important measures are those reflecting their current behavior: monthly prevalence (Table 4), daily prevalence, and half-pack-a-day use (Table 5). Half-pack daily use is highest among Native American seniors, significantly lower among Whites, and far lower among the other subgroups. In contrast to most other drugs, cigarettes in recent years have been used just as much by young women as by young men.

Summary of Subgroup Differences in Prevalence: 1985-89

The patterns of subgroup differences are not the same from one drug to another, as indicated above and as shown in Tables 2-5. Nevertheless, there are some broad consistencies across most drugs.

Among all the subgroups of high school seniors examined in this report, Native Americans have the highest prevalences for use of alcohol, cigarettes, marijuana, cocaine, and most other illicit drugs. The next highest prevalences for alcohol, cigarettes, and most illicit drugs occur among Whites. At the other end of the continuum, Asian Americans report lowest levels of use of alcohol, cigarettes, marijuana, cocaine, and most other illicit drugs. Prevalence levels nearly as low are reported by Blacks, with the exception of marijuana. Prevalence rates

for Hispanics are mostly in the intermediate ranges; a notable exception is that Hispanic males share (with Native Americans) the top position for cocaine use.

Although the two Hispanic subgroups are fairly similar in terms of cocaine use, they differ with respect to most other forms of drug use. Prevalence rates are higher among Mexican Americans for marijuana and most other illicit drugs, as well as alcohol, whereas those with Puerto Rican and other Latin American backgrounds have slightly higher rates of cigarette use.

As a final point in this summary, we note again that prevalence rates for males generally exceed those for females when it comes to alcohol and most illicit drugs, but not cigarettes. It is also the case that these male-female differences are much more pronounced for Blacks and Hispanics than for Whites and Native Americans.

TABLE 2
Lifetime Prevalence of Fourteen Types of Drugs, 1985–1989 Data Combined
by Sex and Race

	Percent ever used													
	White Male	Black Male	MexAm Male	PR&LA Male	Asian Male	Nat Am Male	Other Male	White Female	Black Female	MexAm Female	PR&LA Female	Asian Female	Nat Am Female	Other Female
Minimum N =	(28056)	(3688)	(1518)	(680)	(982)	(537)	(940)	(29808)	(4499)	(1599)	(712)	(917)	(531)	(847)
Marijuana/Hashish	52.9	46.7	55.6	43.1	28.8	54.8	52.2	49.6	34.3	41.7	36.4	22.7	57.5	41.1
Inhalants[a]	21.8	9.5	20.1	16.0	11.7	22.6	19.4	14.7	6.5	12.8	9.8	7.6	14.9	12.1
Hallucinogens	12.7	3.2	10.9	10.4	4.6	14.7	16.4	8.9	1.2	6.2	5.9	3.5	14.2	7.2
LSD	10.8	2.2	9.2	5.5	4.0	11.3	14.0	6.9	0.6	5.2	3.3	2.6	12.0	4.9
Cocaine	16.5	9.1	21.8	23.4	9.0	22.6	20.4	13.3	4.8	12.3	11.0	8.0	22.0	13.4
Heroin	1.5	1.2	1.8	2.7	1.0	4.2	2.4	0.8	0.7	0.7	0.5	1.0	2.2	0.6
Other opiates[b]	11.1	3.7	7.8	5.7	4.7	13.4	10.8	9.5	2.6	5.0	4.0	3.8	9.2	7.2
Stimulants[b]	22.8	8.1	21.0	13.1	10.1	26.8	20.1	26.5	7.2	19.2	13.0	12.6	29.8	20.9
Sedatives[b]	10.3	4.3	10.4	8.3	7.0	15.5	12.5	9.6	2.8	7.2	6.3	5.1	13.4	8.2
Barbiturates[b]	8.6	3.4	9.2	6.9	4.8	13.3	10.5	7.9	2.4	6.3	5.1	4.2	11.4	7.1
Methaqualone[b]	5.4	1.8	4.1	3.6	4.1	8.5	6.3	4.2	0.7	1.8	2.0	1.9	6.0	4.0
Tranquilizers[b]	10.7	3.8	7.8	8.9	5.5	12.4	13.3	11.5	4.1	6.4	10.7	4.9	14.2	10.6
Alcohol	93.8	85.5	89.1	88.5	80.5	89.1	91.0	94.0	81.1	84.9	86.3	76.8	91.4	85.9
Cigarettes	67.0	57.1	67.9	61.6	49.7	73.1	68.9	71.6	53.7	63.1	64.9	44.0	79.1	62.2

[a]Data based on four questionnaire forms. N is four-fifths of N indicated.
[b]Only drug use which was not under a doctor's orders is included here.

TABLE 3
Annual Prevalence of Thirteen Types of Drugs, 1985–1989 Data Combined
by Sex and Race

	Percent who used in last twelve months													
	White Male	Black Male	MexAm Male	PR&LA Male	Asian Male	Nat Am Male	Other Male	White Female	Black Female	MexAm Female	PR&LA Female	Asian Female	Nat Am Female	Other Female
Minimum N =	(28056)	(3688)	(1518)	(680)	(982)	(537)	(940)	(29808)	(4499)	(1599)	(712)	(917)	(531)	(847)
Marijuana/Hashish	40.2	29.8	37.3	30.6	19.6	42.0	37.8	36.0	18.4	26.0	21.3	17.1	44.0	28.6
Inhalants[a]	8.8	2.6	6.0	5.1	4.8	9.6	8.5	5.2	2.2	4.3	2.9	3.2	4.4	3.8
Hallucinogens	8.3	1.9	5.9	6.5	3.0	10.0	10.0	5.0	0.6	2.2	2.1	2.2	9.0	4.6
LSD	7.0	1.3	5.2	3.4	2.5	7.8	7.6	3.9	0.3	1.6	1.1	1.9	7.2	3.0
Cocaine	11.9	6.1	14.7	15.6	5.8	14.2	14.6	9.3	2.6	7.6	8.2	5.7	15.5	10.4
Heroin	0.7	0.7	0.9	1.2	0.4	1.5	1.4	0.3	0.4	0.4	0.4	0.2	1.0	0.3
Other opiates[b]	6.5	1.9	3.2	3.0	3.1	7.4	5.3	5.3	1.2	2.1	1.6	2.1	5.7	3.8
Stimulants[b]	13.6	4.6	11.3	8.0	5.6	17.0	12.6	14.7	3.1	10.1	5.9	7.0	19.4	11.3
Sedatives[b]	5.3	2.2	4.7	4.6	3.4	8.8	7.1	4.4	1.2	2.7	2.6	2.6	6.4	3.6
Barbiturates[b]	4.4	1.9	4.1	4.0	2.6	7.2	6.1	3.8	1.1	2.4	2.5	2.3	6.2	3.1
Methaqualone[b]	2.5	0.9	1.2	2.3	1.5	4.8	3.4	1.4	0.3	0.5	0.5	0.9	2.2	1.6
Tranquilizers[b]	5.8	1.7	2.6	3.1	3.2	6.9	7.8	5.9	1.4	2.1	4.1	1.8	8.7	4.5
Alcohol	88.3	72.5	82.4	80.6	69.3	82.0	84.0	88.6	63.9	73.6	77.2	67.5	81.3	77.7

[a] Data based on four questionnaire forms. N is four-fifths of N indicated.
[b] Only drug use which was not under a doctor's orders is included here.

TABLE 4
Thirty-Day Prevalence of Fourteen Types of Drugs, 1985–1989 Data Combined

	Percent who used in last thirty days													
	White Male	Black Male	MexAm Male	PR&LA Male	Asian Male	Nat Am Male	Other Male	White Female	Black Female	MexAm Female	PR&LA Female	Asian Female	Nat Am Female	Other Female
Minimum N =	(28056)	(3688)	(1518)	(680)	(982)	(537)	(940)	(29808)	(4499)	(1599)	(712)	(917)	(531)	(847)
Marijuana/Hashish	25.0	18.5	22.0	18.9	9.7	27.6	24.4	19.8	9.9	13.6	9.6	8.1	23.9	17.5
Inhalants[a]	3.4	1.4	2.3	2.0	1.3	5.2	4.5	2.0	1.4	2.1	0.8	0.8	0.9	2.5
Hallucinogens	3.5	0.9	2.4	3.0	1.5	3.6	5.1	1.7	0.3	0.7	0.4	0.3	2.7	1.3
LSD	2.8	0.6	1.9	1.6	1.1	3.1	3.5	1.1	0.2	0.3	0.2	0.1	2.2	0.9
Cocaine	5.6	2.6	8.2	8.1	1.8	7.3	9.1	4.1	1.3	3.0	2.9	2.6	9.2	5.0
Heroin	0.3	0.5	0.3	0.9	0.1	1.1	0.6	0.1	0.3	0.2	0.2	0.0	0.4	0.0
Other opiates[b]	2.3	0.9	1.1	1.5	1.6	4.0	2.6	1.9	0.6	0.7	0.5	0.7	2.4	1.2
Stimulants[b]	5.6	1.9	4.9	3.1	2.1	8.1	6.0	6.0	1.3	4.8	1.2	3.6	10.3	5.1
Sedatives[b]	2.2	1.1	2.0	1.8	1.9	4.8	3.4	1.7	0.5	0.9	1.3	1.3	2.6	1.7
Barbiturates[b]	1.8	0.9	1.7	1.3	1.4	3.7	2.6	1.5	0.5	0.8	1.2	1.0	2.1	1.3
Methaqualone[b]	0.9	0.5	0.6	0.9	0.8	2.5	1.6	0.5	0.1	0.2	0.1	0.6	0.9	0.9
Tranquilizers[b]	1.9	0.8	0.8	0.6	1.7	3.1	3.5	2.0	0.5	0.9	1.5	0.9	2.2	1.4
Alcohol	72.3	49.2	65.0	55.4	43.7	69.0	65.4	66.6	32.8	50.5	43.0	34.2	60.2	50.1
Cigarettes	29.8	15.6	23.8	22.0	16.8	36.8	31.5	34.0	13.3	18.7	24.7	14.3	43.6	30.5

[a]Data based on four questionnaire forms. N is four-fifths of N indicated.
[b]Only drug use which was not under a doctor's orders is included here.

TABLE 5
Thirty-Day Prevalence of Daily Use of Three Types of Drugs, 1985–1989 Data Combined
by Sex and Race

	Percent who used daily in last thirty days												
	White Male	Black Male	MexAm Male	PR&LA Male	Asian Male	Nat Am Male	Other Male	White Female	Black Female	MexAm Female	PR&LA Female	Asian Female	Nat Am Female	Other Female
Minimum N =	(28056)	(3688)	(1518)	(680)	(982)	(537)	(940)	(29808)	(4499)	(1599)	(712)	(917)	(531)	(847)
Marijuana/Hashish	5.1	2.8	4.2	3.5	1.7	8.2	6.5	2.1	0.9	1.1	0.5	0.5	4.3	2.4
Alcohol														
Daily	7.0	4.2	8.3	4.0	2.3	10.1	7.3	2.8	0.7	2.6	0.9	0.9	5.4	3.0
5+ drinks in a row/ last 2 weeks	48.1	24.0	45.3	31.4	19.4	48.1	41.1	31.3	9.3	23.6	14.5	10.7	33.7	20.1
Cigarettes	18.8	8.6	11.6	13.3	9.0	26.0	23.2	22.5	7.1	8.1	13.3	9.4	33.8	21.1
Half pack or more per day	12.5	3.3	5.2	6.1	4.4	18.4	15.4	13.3	2.2	2.5	4.2	4.5	23.4	12.7

SECTION III: TRENDS IN PREVALENCE OF DRUG USE, 1976-1989

There have been a number of important increases and decreases in the use of various drugs since the mid-1970s, as we have reported in detail elsewhere (Johnston et al., 1989). Our purpose here is not to review these changes in detail, but rather to consider whether some of the most important racial/ethnic subgroup distinctions observed in the classes of 1985-89 are relatively long-standing ones or reflect recent changes.

Marijuana

Figure 1 Part A shows that the downward trend in annual marijuana use occurred within all subgroups, and that subgroup differences were fairly consistent across time. During all three periods, higher percentages of Native American, White, and Mexican American seniors used marijuana than was true of Black, Puerto Rican and other Latin American, and Asian American seniors.

Cocaine

Figure 1 Part B shows the overall rise in cocaine use between the late 1970s and the early 1980s; however, the patterns of subgroup differences are not so consistent across time. Due to the relatively small numbers of cases in some subgroups and the generally small proportions of cocaine users, we cannot be very confident in asserting different subgroup trends across time. We can, however, assert with confidence that throughout the 1980s Black and Asian American males have reported less cocaine use than have males in other subgroups; the same can be said for Black females compared with other females.

Other Illicit Drugs

Use of most of the other illicit drugs shown in Tables 3 and 4 declined during the past decade (Johnston et al., 1989). Here again, limited numbers of cases in some subgroups and generally low proportions of users provide little basis for asserting differential subgroup trends across time. (Data for the earlier time periods are presented in Appendix C.)

Alcohol

As Figure 1 Part C indicates, 30-day prevalence of alcohol use has declined somewhat, especially among males, during the 14 years examined. Throughout that period, prevalence rates have been highest among White and Native American seniors, lowest among Black and Asian American seniors, and at intermediate levels for the two Hispanic subgroups.

Cigarettes

As shown in Figure 1 Part D, prevalence rates for daily use of cigarettes have declined for all subgroups. Substantial declines occurred between the 1976-79 and 1980-84 intervals, whereas declines in recent years have been much smaller. Some groups (e.g., White males) showed no decline (and actually may have increased) in recent years.

Also clearly evident is the fact that for more than a decade Native American seniors have been smoking at substantially higher rates than any other group, and throughout the 1980s White seniors have had distinctly higher smoking rates than Hispanic, Black, and Asian American seniors.

Among the White seniors, prevalence of daily smoking dropped by about one quarter from the late 1970s to the late 1980s (from 25.8% to 18.8% for males, and from 29.7% to 22.5% for females). In general, the declines in smoking have been stronger among non-White groups. Most notably, daily smoking prevalence rates of Black seniors dropped by two-thirds (from 23.6% to 8.6% for males, and 22.3% to 7.1% for females). Thus, Black-White differences in cigarette smoking have become more pronounced in recent classes of high school seniors.

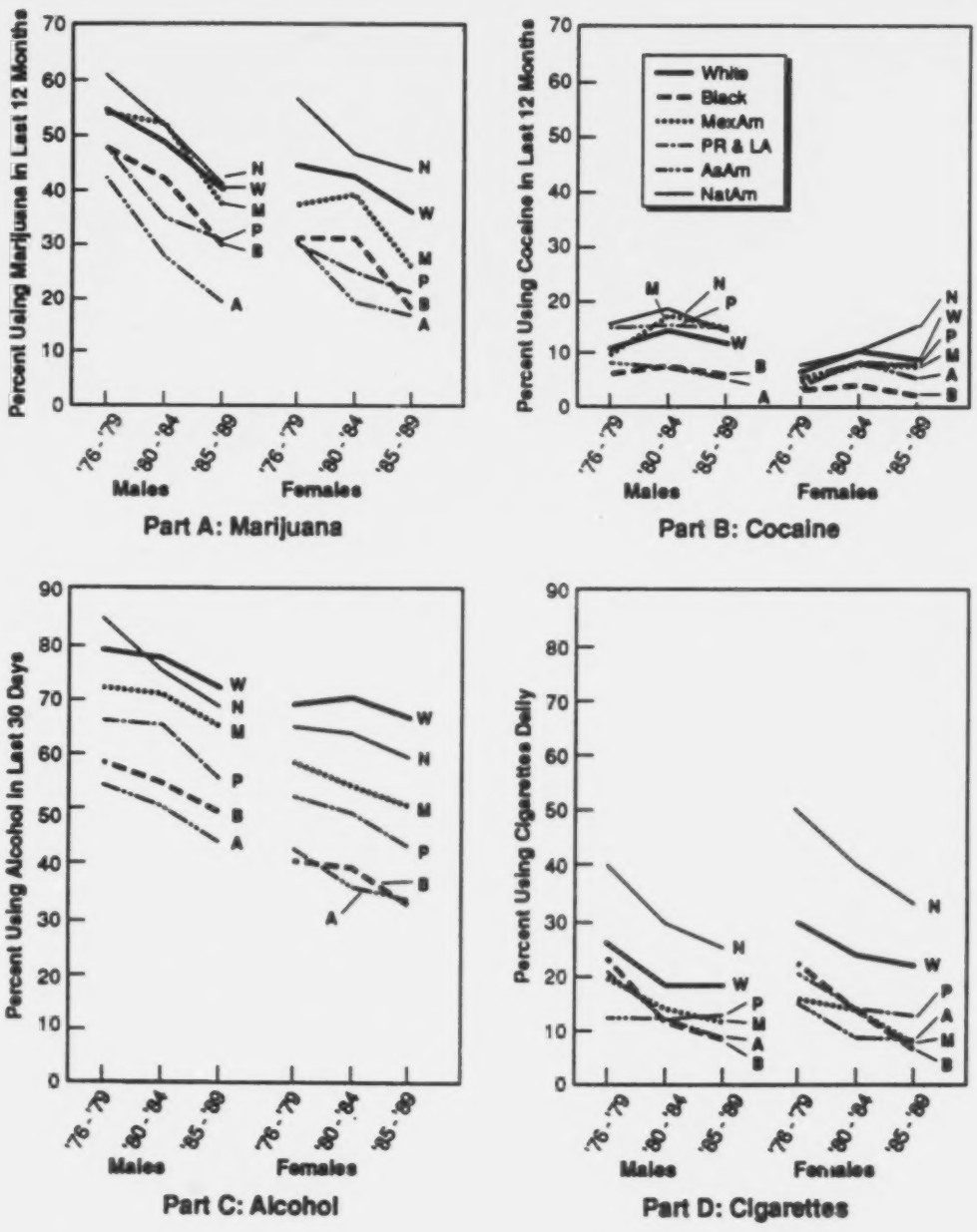

Figure 1. Trends in Use of Four Drugs, 1976-1989, by Sex and Race

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SECTION IV: ANALYSES CONTROLLING BACKGROUND AND SELECTED LIFESTYLE FACTORS

Given the large and long-standing subgroup differences in drug use documented in this report, the question naturally arises: what are the factors which underlie such differences? In this section we address two aspects of that general question: To what extent do racial/ethnic differences in drug use (a) arise simply because of differences in family background and geography, and/or (b) reflect broader differences in lifestyles and values?

Earlier multivariate analyses of data from the Monitoring the Future project have examined a variety of predictors of drug use. In addition to race (Black versus White) and sex, the predictors included parental education (as an indicator of socioeconomic status), number of parents in the home, region, population density, high school curriculum (college preparatory or not), college plans, high school grades, truancy, hours worked per week (during school year), average weekly income, religious commitment, political conservatism, frequency of evenings out for recreation, and frequency of dating. It could be argued that these analyses controlled too much, given that the list of "predictors" included such factors as truancy and frequency of evenings out, both of which are strongly correlated with drug use and both of which could be viewed as consequences, as well as causes, of drug use. Nevertheless, even in the face of these extensive controls, most Black-White differences in drug use remained fairly strong (Bachman et al., 1981). Later analyses of the classes of 1975-1986 replicated these conclusions concerning Black-White differences (Bachman, O'Malley, & Johnston, 1986).

For present purposes we found it useful to carry out somewhat similar multivariate analyses, this time focusing primary attention on differences among the six racial/ethnic subgroups (plus the "other" category). Because sex differences in drug use vary across subgroups, we conducted these analyses separately for males and females, using data from seniors in the classes of 1985-89 (combined). We employed multiple classification analysis, a form of multiple regression analysis which easily accommodates categorical predictors (such as race) and is sensitive to non-linear as well as linear relationships (Andrews, Morgan, Sonquist, & Klem, 1973). We carried out these analyses in two stages, first including only aspects of family background and geography as predictors (in addition to race), and then incorporating the rest of the predictors listed above. Summaries of the results are presented in Tables 6-9; specifically, the tables show subgroup proportions using each drug, first with no adjustments, then after controlling family background and geography, and finally after controlling lifestyle factors.

Controlling Family Background, Region, and Urbanicity

Our first set of multivariate analyses examined racial/ethnic subgroup differences when four other variables were included as predictors: number of parents in the home, educational level of parent(s), region, and population density. In effect, this analysis estimated the levels of drug use which would occur among subgroups if they were all "average" -- i.e., if all subgroups were

distributed the same way as the total sample in terms of family background and location. Since about three-quarters of the total sample is White, this is tantamount to asking whether the other subgroups would have different levels of drug use if their backgrounds were much the same as those of White seniors.

The answer is clearly negative with respect to heavy drinking, as can be seen by comparing the first and second rows in Table 8. The large differences among subgroups remain virtually unchanged; most specific proportions change by no more than .01; and none changes by more than .02. In other words, this analysis suggests that if those aspects of family background and geography which we controlled statistically were actually made identical across subgroups, the rates of heavy drinking (in the past two weeks) would be changed by no more than 2% in any of the subgroups.

The story is much the same for half-pack or more cigarette use (Table 9); controlling background and geography changes most proportions by no more than .01. It may be worth noting, however, that the .02 reductions for Blacks result in estimates of about zero half-pack smoking, as does the .04 reduction for females from Puerto Rican and Latin American backgrounds.

In the case of marijuana use (Table 6), it is again the case that controlling background and geography changes nearly all proportions by .02 or less. The largest changes involve seniors from Puerto Rican and Latin American origins; with background and geography controlled, the estimated annual marijuana use rates drop from 31% to 28% among males, and from 21% to 17% among females.

With respect to cocaine use (Table 7), it appears that if present subgroup differences in family background and geography did not exist, prevalence would be a bit lower among Mexican Americans, somewhat lower among those with Puerto Rican and Latino backgrounds, and distinctly lower (a drop from 6% to 3%) among Asian Americans. Another way of looking at these findings is to focus on subgroup comparisons with these background factors controlled: the differences in cocaine use between Hispanic and White males disappear, whereas the discrepancies are heightened between Hispanic and White females, and between Asian Americans and Whites (both male and female).

In sum, our analyses controlling differences in family composition, parents' education, region, and population density have yielded a few interesting changes, but these are rather modest in size. Moreover, these modest changes more often than not heighten rather than diminish subgroup differences; in six out of eight instances, the beta coefficent after adjustments for background and geography are actually larger than the (unadjusted) eta coefficients (per Table 6-9). We therefore conclude that such background factors are not the dominant causes of most of the racial/ethnic differences in drug use reported here.

Adding Controls for Lifestyles and Values

Our second set of multivariate analyses extended the first set, now adding as predictors a number of measures assessing (a) educational adjustment and success (college plans, college preparatory curriculum, grades, and truancy), (b) part-time work involvement during the school year (hours worked per week and income), (c) religious commitment, (d) political conservatism, (e) frequency of evenings out for recreation, and (f) frequency of dating. Keeping in mind that Whites comprise three-quarters of the total sample, this analysis can be seen as asking what differences in drug use would appear if all subgroups were similar to Whites, not only in background but also in terms of these key aspects of lifestyles and values. The results are presented in the bottom rows of Tables 6-9.

The findings are similar enough that we can discuss the four types of drug use simultaneously. Among Blacks and Hispanics, introducing these additional predictor variables has virtually no effect on estimated usage rates for males; the estimates for females in these groups are very slightly raised, thus making them a bit more similar to White females. Among Native Americans, the additional controls result in some modest reductions in prevalence estimates, also making them slightly more similar to Whites. Among Asian Americans, the additional controls result in moderate to substantial increases in prevalence estimates, but here again the effect is to make them more similar to Whites. But all of these adjustments result in only moderate reductions of some of the beta coefficients for the race/ethnicity variable (see Tables 6-9).

On balance, our analyses indicate that differences along these lifestyle and value dimensions do not begin to account for all, or most, of the important subgroup differences described earlier. In particular, these factors show rather little promise for explaining the large Black-White differences in most forms of drug use. However, the evidence does suggest that if Asian American seniors were more similar to White seniors, especially with respect to scholastic matters and evenings out for recreation, the levels of drug use among the Asian Americans would be substantially higher (i.e., more similar to levels of use among Whites).

TABLE 6
Racial/Ethnic Differences in Annual Marijuana Use Proportions, Controlling for Socio-demographic and Lifestyle Factors, 1985-1989

Males

		White	Black	MexAm	PR & LA	Asian	NatAm	Other	Eta/Beta*	Total R^2
Minimum N		(28056)	(3688)	(1518)	(680)	(982)	(537)	(940)		
Grand Mean	.38									
Unadjusted Mean		.40	.30	.37	.31	.20	.42	.38	.09	.01
Socio-dem. Adj. Mean		.41	.29	.38	.28	.18	.42	.36	.10	.02
Lifestyle and Socio-dem. Adj. Mean		.40	.31	.38	.29	.27	.41	.36	.07	.14

Females

		White	Black	MexAm	PR & LA	Asian	NatAm	Other	Eta/Beta*	Total R^2
Minimum N		(29808)	(4558)	(1603)	(711)	(917)	(535)	(856)		
Grand Mean	.33									
Unadjusted Mean		.36	.18	.26	.21	.17	.44	.29	.14	.02
Socio-dem. Adj. Mean		.36	.18	.27	.17	.15	.45	.26	.15	.04
Lifestyle and Socio-dem. Adj. Mean		.35	.24	.31	.22	.21	.41	.28	.10	.18

*First entry is eta coefficient for the race/ethnicity variable. Second and third entires are beta coefficients for the race/ethnicity variable with socio-demographic and lifestyle variables controlled as indicated.

TABLE 7
Racial/Ethnic Differences in Annual Cocaine Use Proportions, Controlling for Socio-demographic and Lifestyle Factors, 1985-1989

Males

		White	Black	MexAm	PR & LA	Asian	NatAm	Other	Eta/Beta*	Total R^2
Minimum N		(28056)	(3688)	(1518)	(680)	(982)	(537)	(940)		
Grand Mean	.11									
Unadjusted Mean		.12	.06	.15	.16	.06	.14	.15	.07	.01
Socio-dem Adj. Mean		.12	.06	.13	.12	.03	.14	.12	.08	.02
Lifestyle and Socio-dem. Adj. Mean		.12	.06	.13	.12	.07	.13	.11	.06	.11

Females

		White	Black	MexAm	PR & LA	Asian	NatAm	Other	Eta/Beta*	Total R^2
Minimum N		(29808)	(4558)	(1603)	(711)	(917)	(535)	(856)		
Grand Mean	.09									
Unadjusted Mean		.09	.03	.08	.08	.06	.15	.10	.09	.01
Socio-dem Adj. Mean		.10	.02	.07	.05	.03	.16	.08	.10	.03
Lifestyle and Socio-dem. Adj. Mean		.09	.04	.08	.07	.05	.14	.08	.07	.10

*First entry is eta coefficient for the race/ethnicity variable. Second and third entires are beta coefficients for the race/ethnicity variable with socio-demographic and lifestyle variables controlled as indicated.

TABLE 8
Racial/Ethnic Differences in Heavy Alcohol Use (5+ Drinks in a Row in the Last Two Weeks) Proportions, Controlling for Socio-demographic and Lifestyle Factors, 1985-1989

Males

		White	Black	MexAm	PR & LA	Asian	NatAm	Other	Eta/Beta*	Total R^2
Minimum N		(28056)	(3688)	(1518)	(680)	(982)	(537)	(940)		
Grand Mean	.44									
Unadjusted Mean		.48	.24	.45	.31	.19	.48	.41	.17	.03
Socio-dem Adj. Mean		.48	.24	.47	.32	.21	.47	.41	.17	.04
Lifestyle and Socio-dem. Adj. Mean		.47	.25	.48	.33	.32	.45	.41	.14	.16

Females

		White	Black	MexAm	PR & LA	Asian	NatAm	Other	Eta/Beta*	Total R^2
Minimum N		(29808)	(4558)	(1603)	(711)	(917)	(535)	(856)		
Grand Mean	.27									
Unadjusted Mean		.31	.09	.24	.14	.11	.34	.20	.18	.03
Socio-dem Adj. Mean		.31	.10	.26	.14	.12	.34	.20	.17	.04
Lifestyle and Socio-dem. Adj. Mean		.30	.14	.29	.18	.18	.31	.22	.12	.15

*First entry is eta coefficient for the race/ethnicity variable. Second and third entires are beta coefficients for the race/ethnicity variable with socio-demographic and lifestyle variables controlled as indicated.

TABLE 9
Racial/Ethnic Differences in Daily Half-Pack or More Cigarette Use Proportions, Controlling for Socio-demographic and Lifestyle Factors, 1985-1989

Males

	White	Black	MexAm	PR & LA	Asian	NatAm	Other	Eta/Beta*	Total R^2
Minimum N	(28056)	(3688)	(1518)	(680)	(982)	(537)	(940)		
Grand Mean .11									
Unadjusted Mean	.12	.03	.05	.06	.04	.18	.15	.11	.01
Socio-dem. Adj. Mean	.13	.01	.04	.04	.06	.16	.15	.13	.03
Lifestyle and Socio-dem. Adj. Mean	.13	.02	.06	.04	.11	.13	.13	.12	.12

Females

	White	Black	MexAm	PR & LA	Asian	NatAm	Other	Eta/Beta*	Total R^2
Minimum N	(29808)	(4558)	(1603)	(711)	(917)	(535)	(856)		
Grand Mean .11									
Unadjusted Mean	.13	.02	.03	.04	.05	.23	.13	.14	.02
Socio-dem. Adj. Mean	.14	.00	.03	.00	.06	.22	.12	.17	.05
Lifestyle and Socio-dem. Adj. Mean	.14	.01	.04	.01	.09	.18	.11	.14	.15

*First entry is eta coefficient for the race/ethnicity variable. Second and third entires are beta coefficients for the race/ethnicity variable with socio-demographic and lifestyle variables controlled as indicated.

SECTION V: DISCUSSION

The findings presented above clearly indicate that among high school seniors throughout the United States, the use of licit and illicit drugs is not disproportionately high among most non-White subgroups. Quite the contrary, Asian American youth had much lower than average prevalence rates for all of the drugs examined, and the same was true for Black youth with respect to most drugs. Both Hispanic subgroups -- those from Mexican backgrounds and those from Puerto Rican or other Latin American backgrounds -- had prevalence rates in the intermediate ranges, lower than rates for Whites except for relatively high prevalences of cocaine use among the Hispanic males. Only the Native American subgroup showed generally higher prevalence rates than White youth.

On the whole, these findings are consistent with the literature reporting racial/ethnic differences in drug use among youth. One contribution of the present research has been to document these differences based on large, nationally representative samples, an on a broader array of drugs. Another has been to demonstrate that for more than a decade the racial/ethnic subgroups have shown parallel trends, for the most part, in their use of alcohol and the illicit drugs. An important divergence in smoking rates (smaller declines among Whites) has also been noted.

Several important questions remain. First, are these replicated--and thus reliable--findings of subgroup differences also valid? In other words, how accurate are young people's self-reports of drug use in general, and are there reasons to suppose that subgroups may differ in accuracy? Second, how do the subgroups differ in dropout rates, and how do these differences affect our ability to generalize to total age cohorts? These are issues which have concerned us for some time, and they have made us cautious about reporting subgroup differences in drug use (Bachman, Johnston, & O'Malley, 1987). Although we have not fully resolved these questions, we have become increasingly confident that the large subgroup differences reported here are, on the whole, valid. We outline some of our reasoning below.

First, with respect to self-reports of drug use, there is a growing literature indicating their validity (Johnston & O'Malley, 1985; Johnston et al., 1984; O'Malley et al., 1983; Malvin & Moskowitz, 1983; Smart & Jarvis, 1981). Some question may remain, of course, about the willingness of seniors to report their drug use honestly if they are not confident about the purposes of the research, if they do not trust the survey administrators, and/or if they have greater than average tendencies toward favorable self-presentation. Mensch and Kandel (1988a) report that in the National Longitudinal Survey of Youth, which employed face-to-face interviews, Black and Hispanic youth were more likely than White youth to underreport their use of marijuana; however, this underreporting occurred most often at the lowest levels of use. Incidentally, their initial analyses (based on total samples) revealed no underreporting of the licit drugs (i.e., alcohol and cigarettes), which show the largest subgroup differences in the present study.

Earlier analyses of Monitoring the Future data (based on the senior classes of 1984-1987) revealed subgroup differences in rates of missing data and inconsistent responses; however, these differences do not parallel the subgroup differences in self-reported drug use. For example, Native American seniors have relatively high rates of missing data and/or inconsistent responses (6.6% for marijuana) as well as high self-reported drug use, whereas Black seniors have equally high rates of missing data and/or inconsistent responses (6.8% for marijuana) but much lower self-reported drug use. White and Asian American seniors are fairly similar in having low rates of missing data and/or inconsistent responses (2.3% and 3.1%, respectively, for marijuana), but their rates of drug use are distinctly different. (See Table 12 in Appendix A for further details on subgroup differences in missing data and inconsistent responses.)

Additional analyses of our data, specifically contrasting Black and White seniors' answers to other survey questions, are also relevant here. If the racial/ethnic differences observed are valid, one would expect to see parallel differences in related attitudes and beliefs, as well as parallel differences in the proportions of friends reported as using. We found that Blacks are more likely than Whites to perceive that various forms of drug use involve high risks, and Blacks are more likely to disapprove all forms of drug use. Also, Black seniors are much less likely to report smoking, alcohol use, and drunkenness by friends, consistent with the large Black-White differences in self-reported use of these drugs; however, there are smaller Black-White differences in reported friends' use of illicit drugs, which is consistent with the smaller differences in self-reported use of marijuana. All of these additional survey findings seem generally consistent with the Black-White differences in self-reported use. It is hard to imagine that these complexly interrelated findings about Black-White differences are simply the result of selective distortion; in particular, it is unlikely that such distortion would result in much larger differences in self-reported use of the licit drugs compared with the illicit drugs. We find it more parsimonious to conclude that the substantial Black-White differences in self-reports are largely the result of genuine differences in drug use between our samples of Black and White high school seniors.

Even if self-reports are mostly valid across all of the subgroups we have studied, we are faced with further questions because our surveys do not include young people who drop out of high school before late spring of their senior year (except those who later return to complete a "conventional" high school program). Dropout rates differ substantially among subgroups; the High School and Beyond longitudinal study of the 1980 sophomore cohort (i.e., senior class of 1982) yielded dropout rate estimates of 15% for Whites, 22% for Blacks, 28% for Hispanics, 8% for Asian Americans, and 35% for Native Americans (NCES, 1989, p. 26).[4] Recent U.S. Census data indicate that dropout rates for Blacks have been declining, so that they are now close to the rates for Whites (NCES, 1989, p. 15)--and perhaps even lower than Whites when matched for family socioeconomic level.

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[4]Overall dropout rates for this cohort were actually somewhat higher than the High School and Beyond estimates due to several factors; in particular, the initial survey omitted most who dropped out before the end of tenth grade.

Given that drug use is generally higher among dropouts (Bachman, O'Malley, & Johnston, 1978; Johnston, 1973; Mensch & Kandel, 1988b), to what extent is it possible that the subgroup differences reported above are the result primarily of subgroup differences in dropout rates? Put another way, how different would findings be if based on the total cohort of 17-18 year-olds rather than just high school seniors? In general, of course, the inclusion of dropouts would tend to raise the observed prevalence rates for all drugs and all subgroups; however, the impact presumably would be greatest in subgroups with high dropout rates, thus changing subgroup comparisons in several respects: (1) Hispanics have higher than average dropout rates; therefore, comparisons of all White and Hispanic 17-18 year-olds would probably yield somewhat smaller differences in drug use than found in samples of seniors. (2) Asian Americans have lower than average dropout rates; accordingly, this subgroup might be even farther below average, given drug use data based on the total age cohort rather than just seniors. (3) Conversely, given the very high dropout rates among Native Americans, total age cohort data might place them even farther above average in drug use. (4) Black-White differences in drug use might be reduced if we compared the total age cohort rather than just seniors; however, because Black and White dropout rates are now fairly similar, the reduction would not be very large, unless drug use is differentially correlated with dropping out. In particular, modest differences in dropout rates cannot begin to account for the very large Black-White senior differences in heavy drinking, or the even larger differences in cigarette smoking. It is worth noting also that recent household surveys, which do not omit dropouts, find Black-White differences in youthful drug use which are roughly as large as those reported here (NIDA, 1988).

If drug use really is lower than average among Black youth, and among most other non-White youth, an interesting question remains as to why this occurs. The analyses reported here indicate that it cannot be attributed primarily to differences in parental presence or education, nor does it have a great deal to do with where seniors live throughout the United States. Some other dimensions of lifestyle we have measured have more of a bearing on drug use, but they do not account for most of the subgroup differences in use -- especially the very low rates of cigarette and alcohol use by Blacks. Other possibilities which we have begun, and will continue, to explore are that these relatively low usage rates are strongly influenced by particular religious doctrines and affiliations, differences in parent, peer, and community norms, different attitudes regarding the use of drugs, or differing levels of perceived risk.

The very low rates of drug use (particularly cigarette use and alcohol use) by Black students may be surprising, in light of evidence that drug related mortality and morbidity are higher among Black than White adults (Department of Health and Human Services [DHHS], 1986). These contrasting findings are, however, consistent with data from national household surveys comparing Blacks and Whites at various age levels; Black youth show much lower usage rates than White youth, in early adulthood differences are smaller, and by middle adulthood the drug use/abuse rates are often higher among Blacks (NIDA, 1988; Herd, 1989; Robbins, 1989).

It has been observed that "two worlds" of drug use (particularly alcohol use) exist within the Black community: the extremes of abstinence at one end and heavy use/abuse at the other (Herd, 1989; Harper, 1980). As a result of heavy drug use by a relatively small proportion of

Black adults (often having limited financial resources, health care, and insurance), Blacks people are disproportionately represented in morbidity and mortality statistics, and in public treatment centers (Spiegler, Tate, Aitken, & Christian, 1989; Lex, 1987; Watts & Wright, 1983; DHHS, 1986). Such data, rather than findings from general population surveys, often serve as the basis for conclusions about drug use among Black Americans. Our present findings clearly suggest that such data bases are too limited, and can yield a false picture of the subgroup as a whole.

It is equally true that general population surveys do not provide an adequate basis for generalizations about the full range of drug use problems among Blacks, Whites, or any other racial/ethnic subgroup. Persons in drug treatment, the homeless, and those in prison are not represented in general population surveys. Additionally, dropouts, youth who are chronically absent, and those in juvenile detention centers are not represented in samples of high school students. Here again, because Black people make up disproportionate shares of most or all of these "high risk" populations, and because the levels of drug use in these populations are greater than average, it is widely believed that drug use is more pervasive among Black people. (Incidentally, the limited data which do exist specific to various "high risk" adolescent populations are not conclusive with regard to race differences in levels of drug use [Blane & Hewitt, 1977; Herd, 1989].)

In sum, we are confronted with (at least) two worlds of drug use data. On one hand, the findings from general population and school-based surveys clearly and consistently show relatively low levels of drug use by most non-White youth, especially Black Americans and Asian Americans. On the other hand, public health statistics on mortality, morbidity, and treatment provide a somewhat different perspective. So perhaps our most important conclusion must be that neither form of data provides a complete picture of drug use. But that should not overshadow the other important conclusion: the majority of non-White youth do complete high school, and among their usage rates for both illicit and licit drugs are generally lower than average.

APPENDIX A: ASSESSING THE QUALITY OF THE MONITORING THE FUTURE DATA FOR DETERMINING RACE DIFFERENCES IN SELF-REPORTED DRUG USE

This occasional paper examines racial/ethnic differences in the self-reported drug use of high school seniors. The Monitoring the Future project was not, however, specifically designed to study racial/ethnic differences; therefore, a number of issues must be considered when interpreting the findings and assessing the overall quality of the data for understanding race differences. These issues include the representativeness of the Monitoring the Future sample, and racial/ethnic subgroup differences in response tendencies. In this appendix we discuss each of these issues.

The Representativeness of the Monitoring the Future Sample for Non-White Groups

This section examines the representativeness of the Monitoring the Future sample for non-White groups. First, the racial/ethnic distribution of the Monitoring the Future sample is described, focusing on two problems: small sample sizes and clustered groupings for non-White subgroups. Second, factors contributing to the differential representation of non-White youth in the Monitoring the Future sample are discussed. (As noted previously, the Monitoring the Future target population is designed to be a nationally representative sample of high school seniors. No special measures are taken to ensure the inclusion of representative samples for non-White groups. Also, the sample population does not include those young men and women who drop out of school at any time prior to the last few months of the senior year.)

Small Sample Sizes and Clustered Groupings

For any given year, the sample sizes for most non-White subgroups are fairly small. As shown in Table 1, Whites and Blacks are the two largest racial categories, comprising approximately 80% and 12% of the sample population, respectively. Each of the other racial/ethnic groups (Native Americans, Asian Americans, Mexican Americans, and Puerto Rican or other Latin Americans) constitutes 4% or less of the sample. Using the Mexican American group as an example, the average number of respondents per year is about 450. Moreover, because drug use varies considerably according to gender, the drug use data in this report are presented separately for males and females, thus further reducing the number of cases underlying each of the percentages displayed.

The small numbers of respondents for each non-White group are clustered in a limited number of schools. Table 10 shows the racial distribution of the Monitoring the Future sample for 1984-1987 by U.S. region and by population density of school location. The four major regions of the country (Northeast, South, North Central, and West) are defined by the U.S. Bureau of the Census. Using Whites as the basis for comparison, note that each non-White

subgroup is clustered in a specific region of the United States. A majority of the Black sample is from the South. Mexican Americans are clustered in the West; Puerto Rican Americans are predominantly found in the Northeast. The Asian American sample lives primarily in the West. The Native Americans are clustered in the southern and north central regions of the country. The non-White subgroups are also distributed differentially from Whites according to population density. Compared to Whites, all subgroups except Native Americans are less likely to live in rural areas. Latino Americans, Asian Americans, and Blacks are more likely than others to live in the large SMSAs. We should note that the regional distributions of the various racial groups in our sample are fairly consistent with their actual regional distributions (as reported by the U.S. Census Bureau).

Table 10. Distribution of Racial Subgroups By Region and By Population Density 1984-1987 Data Combined

	Region % of subgroup from each region				Population Density % of subgroup from each category		
	NE	NC	S	W	Large SMSA	Other SMSA	Non-SMSA
White	22.6	31.0	28.8	17.5	23.0	44.6	32.4
Black	17.9	18.1	57.0	7.0	31.7	46.8	21.5
Mex Amer	1.2	10.9	34.4	53.4	23.7	63.9	12.4
PR & LA	52.7	10.8	25.6	10.9	54.7	41.9	3.4
Asian Amer.	18.8	17.4	14.7	49.1	43.4	47.4	9.1
Native Amer.	15.7	26.8	37.8	19.6	17.3	40.9	41.7
Other	31.7	21.4	18.1	28.8	37.0	42.0	20.9

The small numbers of cases for non-White subgroups, combined with their clustered groupings in a limited number of schools, place limits on the reliability of the data. Further, because the Monitoring the Future sample is a stratified clustered sample, it yields less accuracy than would be provided by a pure random sample of equal size. Therefore, due to the limited number of non-White respondents and their clustered grouping in a limited number of schools, the margin of sampling error around any statistic describing minorities is larger than for Whites. Appendix B provides further information on design effects to be used in calculating confidence intervals for each of the racial/ethnic subgroups.

Two procedures were used, in preparing this report, to address problems of unreliability. First, we examined the replicability of the findings. Since most questions are repeated from year to year, one can readily establish the degree to which a statistic is replicated by looking at the results for the same question in prior or subsequent years. Second, upon finding that the results

were fairly consistent from year to year, we chose to combine data across years to increase the sample sizes. The analyses in this report present data for the following three time periods: 1976 through 1979, 1980 through 1984, and 1985 through 1989.

Differential Representation[5]

The Monitoring the Future target population is comprised of "traditional" high school seniors, those who are still attending day school in April of their senior year, and the Monitoring the Future samples were designed to represent such young people. The samples do not include dropouts, absentees, students who refuse to participate in the survey, and those who are working toward a diploma outside of a high school setting (for example, General Education Development programs). If these factors affect the same proportion of the class/age cohort for each racial/ethnic subgroup, then the Monitoring the Future sample represents similar segments of each subgroup. However, to the extent that these factors affect differing proportions of each subgroup, differential representation exists. Thus, for example, to the extent that high school dropout rates are higher for a non-White group, smaller segments of that non-White youth population would be represented in our samples of seniors, and comparisons of levels of drug use between races could lead to artifactual conclusions if they were generalized to the whole age band rather than just high school seniors. The following section describes the differential representation of Whites, Blacks, and Hispanics in the Monitoring the Future sample, focusing on dropout rates and absenteeism.

As noted above, the Monitoring the Future target population does not include those young men and women who drop out of high school before graduation (or before the last few months of the senior year, to be more precise), and who do not later resume the "conventional" high school student role. This excludes a relatively small proportion of each age/class cohort -- between 15% and 20%. Dropouts constitute an important segment of the population, since we know that certain behaviors such as illicit drug use and delinquency tend to be higher than average in this group (Johnston, 1973; Bachman et al., 1978). For the purposes of estimating characteristics of the entire age group using the complete Monitoring the Future sample, the omission of dropouts does introduce certain biases, but their small proportion sets outer limits on the bias (Johnston, O'Malley, and Bachman, 1986). For the purposes of estimating differences between racial/ethnic subgroups, however, the omission of dropouts presents a larger problem because dropout rates vary considerably by race/ethnicity.

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[5]Discussion in this section is limited to Whites, Blacks, and Hispanics because Census data regarding school enrollment are not available for the other minority groups. The census data for Hispanics combines all people of Hispanic origin into a single group and are only available for 1984, 1985, and 1986. For purposes of comparison, the MtF data for Mexican Americans and Latin Americans are combined in this section.

Census data characterizing American young people in the approximate age range of those in our sample indicate that, compared with Whites, somewhat lower proportions of Blacks, and much lower proportions of Hispanics remain in school through the end of twelfth grade. Table 11 shows enrollment, completion, and dropout rates for these groups (by sex) as of October 1988. Therefore, smaller segments of these two non-White youth populations than of the White population are represented by our samples of high school seniors.

Matters are further complicated by the fact that our obtained samples appear to underrepresent those Black males who, according to Census figures, are in high school at the twelfth grade level. This lack of correspondence with Census figures could arise for a number of reasons, including any one or more of the following: 1. Our operational definition of high school seniors differs from the Census definition of individuals in the fourth year of high school. 2. Our obtained samples reflect cases lost due to routine absenteeism (although this can be estimated and then corrected, at least in large measure, by reweighting the data). 3. Other loss of cases resulting from factors which are not routine can reduce obtained samples for subgroups; these include deliberately avoiding the class session scheduled for the survey, attending but refusing to participate, or failing to respond to the racial identification item in the questionnaire. 4. Missing data and/or internally inconsistent responses on other key items (i.e., self-reports of drug use) can further reduce obtained samples for drug use comparisons.

We carried out a number of detailed comparisons between our own obtained samples and the figures derived from Census surveys. We present here the conclusions we have drawn from these comparisons, and their implications with respect to our ability to generalize from our obtained samples to Black and White high school seniors in general.

We begin by noting that Census data indicate that during the mid-1980s about 14% of the 16 to 18-year-olds in the United States were Black, whereas about 12% of all seniors in the Monitoring the Future samples during that time were Black. Recent Census estimates of school noncompletion rates have not been much greater for young Blacks than for young people as a whole, although Blacks' rates, especially those for males, still are a bit higher than those for Whites (NCES, 1989). Why, then, do our samples have disproportionately small numbers of Blacks? Several factors may be involved.

Differences in Operational Definitions. The Census figures are based on anyone described as being enrolled in school; the closest comparison groups available are those enrollees considered to be in the fourth year of high school as of October 1 (the Census Current Population Survey is conducted shortly thereafter). The Monitoring the Future project administers questionnaires to seniors in "regular" daytime high school programs (not night school or special classes preparing for high school equivalency exams, etc.) during spring (mostly March-April). Thus, there are two important differences: (a) the Census definition is likely to be more inclusive of students not in regular high school programs; (b) each year some of those who are twelfth graders at the start of October drop out of school before March. For both of these reasons we should expect that the numbers of individuals eligible for the Monitoring the Future survey each

Table 11. High School Completion Status by Race/Ethnicity by Sex by Age: October 1988.

	Race/ethnicity and sex					
	Male			Female		
Age	White	Black	Hispanic*	White	Black	Hispanic*
			Percent enrolled in high school or below			
18-19	16.4	28.6	24.2	7.1	19.2	8.8
20-21	1.0	.7	2.6	.4	.0	1.2
			Percent completed high school			
18-19	68.1	53.4	40.6	79.9	63.1	63.8
20-21	83.0	77.6	53.9	87.2	84.8	56.1
			Percent high school dropouts			
18-19	15.5	18.0	35.2	13.1	17.7	27.4
20-21	16.1	21.8	43.5	12.5	15.2	42.7

* Hispanics may be of any race.

Source: U.S. Department of Commerce, Bureau of the Census, Current Population Survey, unpublished tabulations. NCES, 1989, p. 70.

spring would fall short of the numbers estimated by Census to have been in the fourth year of high school during the preceding October.

We should also expect the Monitoring the Future "shortfall" to be larger among older individuals, based on the following reasoning: Most of those aged 18, and virtually all of those aged 19 or older, as of October 1 of their senior year, were one or more grades "late," indicating that they had been held back a grade, or for some other reason (such as dropping out or expulsion) had left school for some period of time. Such individuals have greater than average probabilities of dropping out of school during their senior year, and they are also more likely to have switched to alternative education programs (in many cases prior to the Census survey). We note also that Blacks are more likely than Whites to have reached or exceeded age 18 early in their senior year, and this is especially true for males.

The shortfalls outlined above as reasonable to expect in our target samples are, indeed, reflected in our obtained samples, even after we make adjustments for routine absenteeism (as discussed below). We thus conclude that a major reason why our samples show different racial compositions than Census reports on twelfth-graders is that the two data sources (a) define somewhat different populations, and (b) survey them at distinctly different points during the senior year. In other words, we get different answers, in part, because we are measuring different things at different times. Nevertheless, the Census data are still very useful for making some approximate checks on our obtained samples. Moreover, we can check more precisely when we control age level; specifically, the matches with Census data are relatively good for those age 17 or younger (as of October 1 of senior year).

Routine Absenteeism. The Monitoring the Future surveys include questions about days of school missed during the preceding four weeks, and these can be used to derive a measure of (recent) proportion of days present. For example, a student absent for 10 out of the 20 days would be present .50 of all days. If we weight such individuals by the inverse of that proportion (in this case a weight of 2.0), then the approximately 50% of such individuals who happen to be present on the day of the survey can represent both themselves and the other half who happen to be absent on that day. We have carried out such weighting procedures to learn their effects on drug use estimates; although frequent absentees have distinctly higher rates of drug use, such frequent absentees constitute a sufficiently small proportion of the total sample that overall drug use estimates are not substantially affected (see Johnston & O'Malley, 1985; also Johnston et al., 1989). For present purposes we note two conclusions: First, the adjustment for absenteeism largely, although not entirely, corrects for the sample losses due to missing students who are not present at the time of survey administration (our estimates of such losses are based on classroom teacher reports of class size, compared with numbers actually completing questionnaires in each class). Second, and more important, the overall rates of absenteeism are not very different for Blacks and Whites; thus absenteeism does not seem an important factor in accounting for the lower proportions of Black males in the Monitoring the Future obtained samples compared with Census estimates of Black males in the fourth year of high school. (A further implication of the lack of large race differences in absenteeism is that we judged it unnecessary to adjust for this factor in the main body of findings in this report.)

Lost Cases Due to Other Reasons. We mentioned earlier a number of factors other than routine absenteeism which would lead to loss of cases for purposes of subgroup analyses, including deliberately avoiding the class session scheduled for the survey, attending but refusing to participate, or failing to respond to the racial identification item (or the sex identification item) in the questionnaire.

We do not have any direct estimates of the numbers of respondents who deliberately avoid the class session scheduled for survey administration, but we think the proportions are quite small. Our basis for this view is that the upweighting for routine absenteeism is sufficient to account for most of the differences between the obtained classroom samples and the class enrollment data supplied by teachers. We should add that some additional (i.e., non-routine) absences may occur at the time of the surveys not because of any intentional avoidance of the survey, but rather because of trips and other special activities scheduled near the time of graduation. These kinds of absences are not captured by our items used to measure absenteeism during the previous four weeks. Our data provide no indication that one subgroup is more likely than another to be affected by these non-routine absences.

Refusals to participate in the survey are quite rare -- only about 1%, based on estimates by the SRC staff members who administer the questionnaires in the schools. Of course, if such refusals were heavily concentrated in a minority subgroup, that would produce some degree of differential underrepresentation. Although we can imagine that some minority seniors would have greater than average suspicions or concerns about such a survey, we have no direct evidence that this led to differential refusals to fill out a questionnaire. Again, the one sort of evidence we have is that the rate of refusal is so low that it is relatively unlikely that this factor would make a substantial contribution to any differential underrepresentation.

Another way in which individual cases are lost for these subgroup analyses is that they fail (presumably refuse) to provide the data necessary to classify them into one of the subgroups. Two to 3% of survey participants do not answer any of the demographic questions which appear in the middle of each questionnaire form; some may refuse to provide any such information, but we suspect that more of them simply fail to move through the questionnaires quickly enough to reach this point. Of the 97 to 98% who do answer the initial demographic questions about year and month of birth, about 1% decline to identify themselves as male or female. A slightly smaller number fail to answer the racial/ethnic identification item; however, 2 to 3% of those answering choose the "other" response. If some respondents are opposed to providing this sort of self-identification, and if such individuals occur disproportionately within non-White subgroups, then this could contribute to differential underrepresentation.

Racial/Ethnic Differences in Missing Data on Drug Use Items

Among all individuals who participate in the survey and provide the demographic data necessary for classification into subgroups, a small proportion fail to answer some or all of the items dealing with drug use. (These items, incidentally, appear earlier in the questionnaire than

the demographic items; any individual progressing straight through the questionnaire far enough to provide the data necessary for subgroup classification already would have confronted the self-report drug use section.) About seven percent of Blacks either failed to answer, or answered inconsistently, several questions about marijuana, whereas such missing data occurred for fewer than half that proportion of Whites (see Table 12). We also note that these proportions are just about the same for males and females, but the missing data rates for 18-year-olds are roughly double those for 16- and 17-year-olds. It is likely that many of the 18-year-olds had been held back a grade in school, and the distinctly higher rates of missing data among these individuals suggest the possibility that a few with reading difficulties may have had trouble with the self-report drug use items, and thus answered inconsistently or not at all. Of course it is also very likely that at least some individuals simply refused to answer the drug use items because they did not want to reveal that information, perhaps prompted by this comment in the questionnaire immediately preceding the marijuana items: "We hope that you can answer all questions; but if you find one which you feel you cannot answer honestly, we would prefer that you leave it blank." Presumably that instruction would cover all instances of unwillingness to respond; furthermore, it might prompt an occasional nonresponse by an otherwise willing respondent who was unsure about numbers of uses and, equating honesty with accuracy, decided it was better to leave the item blank. Whatever the mix of causes, missing or inconsistent data on the drug use items slightly reduce our samples; because the losses differ across subgroups, they contribute to differential underrepresentation. Missing data and inconsistent response rates for all subgroups (classes of 1984-1987) are presented in Table 12.

Racial/Ethnic Differences in Response Tendencies

We have discussed in other publications (e.g., Bachman et al., 1987, pp. 9-11) a number of Black-White differences, on average, in patterns of response to certain types of questionnaire items. In this section we address some of those issues, borrowing from our earlier discussions.

Across a wide range of the questionnaire items used in the Monitoring the Future surveys, we have observed that the tendency to state agreement in answering agree-disagree questions is greater among Black than among White respondents. We have observed also that White respondents are more likely than Black respondents to use the middle answer categories, rather than the end points, on agree-disagree and similar scales (Bachman & O'Malley, 1984b). Such differences in response styles can have important implications for interpreting Black-White differences in some attitude measures as well as personality measures such as self-esteem (see Bachman & O'Malley, 1984a). However, these differences in use of certain response scales, particularly "attitude" scales, seem less likely to affect "factual" material such as self-reports of drug use. In particular, we think distinctions between no use and any use of a drug during a given period are unlikely to be affected seriously by these response style differences.

Another difference which we have observed and reported (e.g., Bachman et al., 1981, 1987) is that Black respondents are more likely than Whites to state, in answer to a set of items at the end of one questionnaire form, that if they had used marijuana or heroin they would <u>not</u>

TABLE 12
Percentages Having Missing Data or Inconsistent Responses on Each of Four Drug Use Measures, 1984–1987 Data Combined

	White Male	Black Male	MexAm Male	PR&LA Male	Asian Male	Nat Am Male	Other Male	White Female	Black Female	MexAm Female	PR&LA Female	Asian Female	Nat Am Female	Other Female
Marijuana/Hashish, Last 12 Months														
Missing Data	1.9	3.9	2.8	2.7	2.1	2.8	5.2	1.4	3.8	2.5	3.6	1.0	4.7	3.9
Inconsistent Responses	0.7	3.7	2.5	2.5	2.1	2.9	3.1	0.5	2.4	1.7	0.9	1.0	2.7	2.5
Cocaine, Last 12 Months														
Missing Data	1.3	3.4	1.9	2.9	2.3	2.2	3.2	1.0	3.0	2.6	2.3	2.0	2.5	1.8
Inconsistent Data	0.2	1.2	0.7	1.2	0.2	1.7	1.2	0.1	0.5	0.3	1.3	0.3	0.5	1.8
Alcohol, Last 12 Months														
Missing Data	2.4	5.6	3.0	2.8	4.0	3.3	5.5	2.0	6.0	3.5	3.0	3.2	4.0	2.9
Inconsistent Data	1.2	6.6	3.7	4.5	4.4	3.4	4.7	1.2	5.4	3.6	4.2	3.0	6.5	4.3
Cigarettes, Last 30 Days														
Missing Data	1.3	3.6	2.0	2.6	1.6	2.0	2.4	1.0	3.3	1.7	2.0	1.3	1.4	1.6
Inconsistent Data	0.2	0.5	0.5	0.4	0.6	1.3	1.2	0.1	0.4	0.3	0.2	0.6	0.8	0.7

have been willing to report it in the survey. That finding clearly raises concerns about the validity of the Black-White differences in self-reports of drug use; accordingly, we examined the evidence more closely in the process of preparing this report. Based on that examination we now believe that other factors may account for most of the Black-White differences that appear in responses to these questions about willingness to report drug use. Our reasons are outlined below.

We begin by reviewing the actual wording of the three items, which appear at the end of questionnaire Form 5. The first deals with marijuana: "If you had ever used marijuana or hashish, do you think that you would have said so in this questionnaire?" and respondents are given four alternatives: "No; Not sure; Yes; I did say so." The same wording is then repeated for amphetamine use (without a doctor's orders), and then for heroin use. We must stress that we include these items in this one questionnaire form largely for exploratory purposes, and to detect possible trends in willingness to report; we are not confident that the items will, or even could, be answered honestly or accurately by all respondents. We recognize that these questions are highly hypothetical for some seniors, who may perceive the question as asking, in effect: "If you were the kind of person who would use heroin, would you be likely to tell the truth about it in this questionnaire?"

In fact, it appears that some respondents did not answer these questions very thoughtfully, judging by the inconsistencies with their earlier self-reports of drug use. For example, among those who said they would not have admitted to marijuana use in this questionnaire (roughly 6%-7%), at least 1 in 4 actually had reported such use several pages earlier. The same is true for those who indicated they were "not sure" about whether they would have admitted marijuana use (also roughly 6%-7%). Also, although approximately 8% each year answered "I did say so" to the question about heroin use, 9 out of 10 of these individuals actually had reported no such heroin use. (Perhaps they misinterpreted the response to be indicating "I did tell the truth"). Based on these several kinds of inconsistencies, we conclude that these relatively difficult hypothetical questions, coming at the end of a fairly long questionnaire, generated a greater than usual number of "random" or "careless" responses.

Note also that each year some respondents run out of time and stop responding at various points in the final pages of the questionnaires. In the case of Form 5, this amounts to about 1 out of every 3 Black seniors, and about 1 out of every 7 or 8 White seniors. Given this Black-White disparity in questionnaire completion rates, it also seems plausible that among those seniors who did reach the final questions about willingness to report drug use, a larger proportion of Blacks than Whites were responding hastily rather than carefully.

In sum, missing data and inconsistencies occur in rather small numbers among the self-reports of drug use, they occur in somewhat larger numbers among the responses to the hypothetical questions about willingness to report drug use, and they are more likely to occur among Black than among White respondents. We suspect that some, perhaps most, of these Black-White differences have less to do with willingness to report drug use and more to do with experience and skill in filling out questionnaires (i.e., something similar to being "test wise").

Therefore, although we remain cautious about reporting and interpreting racial differences in survey responses, especially when such differences are relatively small, we feel that the generally large racial/ethnic subgroup differences in self-reported drug use reported herein cannot be dismissed as due to response styles or willingness to report honestly.

APPENDIX B: DESIGN EFFECT ESTIMATES FOR RACIAL/ETHNIC SUBGROUPS

The Monitoring the Future project uses a multi-stage sampling design which involves stratification, clustering (by schools), and differential weighting of respondent scores, all of which influence sampling error. Compared with a simple random sample of the same size, stratification tends to heighten the precision of a sample, but the effects of clustering and weighting reduce precision. In the Monitoring the Future samples these several factors combine to produce larger sampling errors than would result from a simple random sample of equivalent size, thus making it inappropriate to rely upon the usual formulae for computing confidence intervals and other significance tests.

Kish (1965, p. 258) has defined a correction term called the design effect (or DEFF) as equal to the actual sampling variance divided by the sampling variance expected from a simple random sample of the same size. This amounts to a measure of what might be called the "inefficiency" of the complex sample. For example, if a complex sample of 4,000 cases has the same level of accuracy (e.g., same size confidence intervals around various percentages) as a simple random sample of 1,000 cases, then the design effect for the complex sample is 4.0 In other words, it would require four times as many cases in the complex sample to achieve the same level of accuracy or precision as would a simple random sample.

(Of course, locating and collecting survey data from a simple random sample representing the United States would be prohibitively expensive; thus an "efficient" sample from one perspective would be dreadfully inefficient from the standpoint of cost. The Monitoring the Future samples are highly cost-effective and very efficient from the standpoint of accuracy per dollar spent; nevertheless, it is necessary to "scale down" the sample sizes according to estimated design effects.)

What follows is a very brief discussion of design effects as related to the present report; this material has been adapted from a more extensive discussion by Bachman et al. (1987, pp. 261-268).

In principle, every different statistic resulting from a complex sample can have its own design effect; however, it would not be feasible to compute and report separate design effects for each statistic (nor would such computations, which are themselves estimates, be free from error). In practice, design effects are averaged across a number of statistics and these average values are used to estimate the design effects for other statistics based on the same sample. We have followed that practice, although we have found it important to distinguish three different design effects based on large differences in racial/ethnic subgroup sizes.

Kish, Groves, and Krotki (1976) observed that design effects tend to be smaller for subgroups than for total samples, and that the smaller the subgroup the smaller the design effect is likely to be. The explanation for this phenomenon is that the average number of cases in each sampling cluster is an important factor in determining the size of the design effect, and as

subgroup size decreases so does the average number of cases per cluster. This may be counteracted, to some extent, by tendencies for various racial/ethnic subgroups to be overrepresented in some high schools and underrepresented in others (i.e., a greater than random amount of "clustering" by schools). Nevertheless, an extensive sampling of design effects revealed that the sample size phenomenon predominates here.

Specifically, we found that design effects for Monitoring the Future samples, combined across four or five senior classes and extended across a number of substances, are reasonably well approximated by the formula DEFF = 2.0 + .0002N. It would be unnecessarily cumbersome (and imply a greater level of precision than justified) were we to follow that formula exactly for each subgroup. Instead, we have found it quite adequate to apply just three design effects (derived from the formula, with some modest rounding):

For White males or females, DEFF = 8.0
For Black males or females, DEFF = 3.0
For all other subgroups, male or female, DEFF = 2.2

We have used these as adjustment factors in all of the analyses reported herein. (As indicated above, our procedure is to divide the actual numbers of cases by the above DEFF values, and then use the resulting "effective N" values in the formulae developed for simple random samples.) Our procedure is slightly conservative when it comes to comparisons between subgroups (and perhaps also for other relational analyses); this is because the actual design effects for comparisons of percentages tend to be somewhat smaller than the design effects for single percentages (see Bachman et al., 1987, for illustrations).

APPENDIX C

TABLES OF USE PREVALANCE FOR 1976-1979 DATA COMBINED AND FOR 1980-1984 DATA COMBINED, BY SEX AND RACE

TABLE 13
Lifetime Prevalence of Fourteen Types of Drugs, 1976–1979 Data Combined
by Sex and Race

	Percent ever used													
	White Male	Black Male	MexAm Male	PR&LA Male	Asian Male	Nat Am Male	Other Male	White Female	Black Female	MexAm Female	PR&LA Female	Asian Female	Nat Am Female	Other Female
Minimum N =	(24181)	(2464)	(517)	(290)	(227)	(304)	(812)	(24857)	(3500)	(570)	(282)	(211)	(259)	(669)
Marijuana/Hashish	63.0	58.9	66.9	56.7	50.1	72.3	63.0	53.3	43.1	49.5	41.7	36.4	66.4	52.2
Inhalants[a]	14.7	8.6	19.5	10.5	10.8	21.9	14.7	9.6	4.6	9.5	4.4	6.2	15.0	10.0
Hallucinogens	17.4	6.4	14.8	15.5	11.3	23.5	19.0	13.1	3.1	10.4	6.7	9.8	19.8	15.8
LSD	12.3	4.4	10.2	13.4	8.4	17.5	14.3	8.7	1.9	7.2	4.9	7.9	13.5	10.2
Cocaine	14.8	12.3	15.9	20.6	12.8	22.6	18.0	9.7	6.5	8.0	7.8	9.2	15.9	14.0
Heroin	1.8	2.2	2.2	5.3	3.9	3.0	3.7	1.1	0.9	1.1	0.8	1.1	2.2	1.9
Other opiates[b]	11.9	5.4	8.6	8.4	7.0	15.5	15.5	9.3	3.4	3.9	5.8	6.9	15.1	13.2
Stimulants[b]	23.9	9.3	19.2	19.1	16.8	32.6	25.6	25.7	8.5	19.6	18.7	17.1	37.8	28.6
Sedatives[b]	17.7	8.9	15.6	16.9	14.8	26.0	20.1	16.6	6.8	10.7	14.4	12.3	23.1	19.7
Barbiturates[b]	15.3	7.2	13.2	14.4	13.0	20.3	15.9	14.8	5.8	9.6	12.9	10.3	20.6	18.3
Methaqualone[b]	9.7	3.4	8.9	8.6	5.5	17.2	11.8	7.4	2.0	5.1	5.3	4.2	10.8	9.5
Tranquilizers[b]	16.9	7.4	14.9	18.4	10.0	24.0	17.2	19.2	8.8	11.2	22.1	13.8	28.1	20.9
Alcohol	94.5	89.6	93.3	89.7	88.7	96.3	92.7	92.8	84.0	87.6	87.2	74.3	96.2	90.8
Cigarettes	74.8	73.4	75.3	68.4	62.8	82.1	77.7	75.3	73.2	71.8	72.8	57.6	88.4	77.7

[a]Data based on four questionnaire forms. N is four-fifths of N indicated.
[b]Only drug use which was not under a doctor's orders is included here.

TABLE 14
Annual Prevalence of Thirteen Types of Drugs, 1976–1979 Data Combined
by Sex and Race

	Percent who used in last twelve months													
	White Male	Black Male	MexAm Male	PR&LA Male	Asian Male	Nat Am Male	Other Male	White Female	Black Female	MexAm Female	PR&LA Female	Asian Female	Nat Am Female	Other Female
Minimum N =	(24181)	(2464)	(517)	(290)	(227)	(304)	(812)	(24857)	(3500)	(570)	(282)	(211)	(259)	(669)
Marijuana/Hashish	54.7	48.0	54.5	48.0	42.8	61.4	53.7	44.5	31.2	37.7	30.3	30.7	57.3	44.4
Inhalants[a]	5.6	2.7	4.3	2.9	2.5	11.5	6.1	3.2	1.1	2.4	0.7	2.9	4.6	2.6
Hallucinogens	12.3	3.4	9.0	12.0	8.1	14.6	14.2	8.0	1.2	5.3	3.9	6.6	9.8	9.9
LSD	8.2	2.1	6.1	9.8	5.9	10.7	9.4	5.0	0.6	4.0	2.1	4.7	7.2	6.2
Cocaine	11.1	6.4	9.7	14.9	8.6	15.7	12.0	6.7	3.5	4.7	3.8	5.9	8.0	10.2
Heroin	0.9	0.8	1.7	3.5	0.3	1.3	1.7	0.5	0.4	0.7	0.5	0.0	0.5	1.0
Other opiates[b]	7.6	2.3	5.8	3.7	4.2	10.6	9.5	5.6	1.7	2.1	2.8	2.1	7.0	7.4
Stimulants[b]	18.2	4.7	13.6	13.1	11.4	27.0	18.4	18.5	4.6	12.6	10.6	11.0	29.3	20.1
Sedatives[b]	11.7	4.4	9.1	11.1	11.5	16.1	11.8	10.2	3.0	5.5	7.9	8.4	15.0	13.6
Barbiturates[b]	9.5	3.5	7.3	8.7	10.1	13.6	9.3	8.7	2.6	4.7	7.3	6.0	14.2	11.9
Methaqualone[b]	6.6	1.9	6.1	6.2	4.2	10.4	7.0	4.6	0.9	2.1	3.0	3.0	5.3	5.9
Tranquilizers[b]	10.4	3.7	8.3	9.5	7.9	13.5	11.0	11.4	4.1	6.0	9.1	7.7	17.8	11.8
Alcohol	90.7	80.1	87.5	85.3	77.9	94.3	87.3	87.7	68.6	79.0	81.4	67.4	89.0	81.2

[a]Data based on four questionnaire forms. N is four-fifths of N indicated.
[b]Only drug use which was not under a doctor's orders is included here.

TABLE 15
Thirty-Day Prevalence of Fourteen Types of Drugs, 1976-1979 Data Combined
by Sex and Race

	Percent who used in last thirty days													
	White Male	Black Male	MexAm Male	PR&LA Male	Asian Male	Nat Am Male	Other Male	White Female	Black Female	MexAm Female	PR&LA Female	Asian Female	Nat Am Female	Other Female
Minimum N =	(24181)	(2464)	(517)	(290)	(227)	(304)	(812)	(24857)	(3500)	(570)	(282)	(211)	(259)	(669)
Marijuana/Hashish	41.1	37.2	38.7	37.2	30.2	50.1	41.5	30.9	22.5	25.5	20.7	20.3	43.6	32.5
Inhalants[a]	1.9	1.1	1.2	1.0	1.4	4.6	3.2	0.9	0.6	1.0	0.0	1.4	2.0	0.6
Hallucinogens	5.2	1.4	4.9	4.1	3.5	8.1	5.9	2.9	0.6	1.5	0.9	3.0	4.0	4.2
LSD	2.9	0.7	2.6	3.3	2.9	5.9	4.1	1.5	0.3	1.3	0.6	2.1	2.5	2.5
Cocaine	4.7	2.4	4.6	8.2	2.8	8.4	6.2	2.7	1.6	2.1	1.1	3.7	3.8	3.7
Heroin	0.3	0.5	0.3	2.4	0.0	0.4	1.3	0.1	0.1	0.2	0.3	0.0	0.0	0.3
Other opiates[b]	2.9	0.9	2.5	1.4	1.4	4.0	3.8	2.1	0.6	0.7	1.3	1.5	3.2	2.1
Stimulants[b]	9.3	2.0	6.5	6.1	5.8	15.2	9.6	9.8	2.2	6.5	5.0	4.1	18.2	10.5
Sedatives[b]	5.1	1.6	4.4	3.5	4.0	10.8	5.8	4.4	1.5	2.1	1.6	4.5	10.5	5.8
Barbiturates[b]	3.9	1.4	3.1	2.3	3.5	9.4	4.2	3.7	1.3	1.9	1.6	2.5	9.2	5.3
Methaqualone[b]	2.5	0.5	2.8	2.3	0.7	5.2	3.2	1.7	0.5	0.3	0.2	2.0	3.5	2.0
Tranquilizers[b]	3.9	1.6	3.9	3.4	2.7	6.3	3.7	4.4	1.3	2.2	3.5	2.5	11.2	5.1
Alcohol	78.9	58.6	72.5	66.2	55.0	85.3	74.9	69.4	40.9	58.4	52.5	13.5	65.6	64.8
Cigarettes	35.0	33.1	30.6	29.7	20.7	50.3	41.6	39.1	33.6	30.1	33.9	24.4	55.3	43.6

[a]Data based on four questionnaire forms. N is four-fifths of N indicated.
[b]Only drug use which was not under a doctor's orders is included here.

TABLE 16
Thirty-Day Prevalence of Daily Use of Three Types of Drugs, 1976-1979 Data Combined
by Sex and Race

	Percent who used daily in last thirty days												
	White Male	Black Male	MexAm Male	PR&LA Male	Asian Male	Nat Am Male	Other Male	White Female	Black Female	MexAm Female	PR&LA Female	Asian Female	Nat Am Female	Other Female
Minimum N =	(24181)	(2464)	(517)	(290)	(227)	(304)	(812)	(24857)	(3500)	(570)	(282)	(311)	(259)	(669)
Marijuana/Hashish	12.6	7.3	7.1	10.6	5.0	17.3	14.8	6.5	3.4	4.1	3.5	4.9	11.9	8.9
Alcohol														
Daily	8.9	4.0	7.3	6.2	2.3	19.3	14.1	3.7	0.7	2.5	1.4	2.3	6.3	5.5
5+ drinks in a row/ last 2 weeks	52.9	28.9	51.6	35.6	27.3	63.5	49.8	31.6	12.4	25.5	22.1	15.6	40.3	27.7
Cigarettes	25.8	23.6	19.5	21.2	13.3	40.9	33.7	29.7	22.3	16.3	20.5	15.4	50.3	34.6
Half-pack or more per day	19.2	11.5	8.7	12.6	6.8	36.1	25.2	19.5	8.4	6.3	8.8	7.2	35.3	22.8

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TABLE 17
Lifetime Prevalence of Fourteen Types of Drugs, 1980-1984 Data Combined
by Sex and Race

	Percent ever used												
	White Male	Black Male	MexAm Male	PR&LA Male	Asian Male	Nat Am Male	Other Male	White Female	Black Female	MexAm Female	PR&LA Female	Asian Female	Nat Am Female	Other Female
Minimum N =	(31028)	(3866)	(741)	(526)	(599)	(506)	(982)	(31129)	(5093)	(739)	(578)	(540)	(431)	(841)
Marijuana/Hashish	62.0	57.3	67.6	51.9	39.7	70.2	60.9	56.4	47.6	51.7	42.6	27.4	67.5	51.2
Inhalants[a]	16.8	8.3	20.3	12.5	11.6	16.0	18.3	10.9	5.5	12.6	8.6	7.8	11.1	13.3
Hallucinogens	15.5	4.2	15.8	10.1	8.0	22.1	19.6	11.2	2.5	8.3	7.7	4.0	16.3	12.6
LSD	11.9	2.3	13.3	6.2	6.6	18.6	14.3	8.0	1.2	5.0	5.2	3.2	11.1	7.9
Cocaine	18.9	12.7	23.9	19.5	10.7	27.2	24.0	14.2	7.6	10.7	13.1	10.4	18.1	17.5
Heroin	1.2	1.3	2.1	1.7	1.2	3.5	4.0	0.8	0.7	1.4	0.4	1.1	4.0	2.6
Other opiates[b]	11.8	4.1	12.0	7.3	5.8	14.3	13.0	9.6	3.3	6.0	4.5	5.1	12.2	9.2
Stimulants[b]	30.8	10.1	30.0	15.1	13.5	35.3	28.8	35.6	10.4	28.0	16.1	17.5	12.8	27.8
Sedatives[b]	17.0	6.6	16.1	12.6	10.0	28.1	20.1	14.9	4.6	10.6	9.0	8.3	18.4	13.0
Barbiturates[b]	12.0	4.6	11.6	9.1	6.5	19.8	14.8	10.5	3.8	9.1	7.5	5.9	13.7	9.9
Methaqualone[b]	12.2	3.4	10.4	7.7	6.3	21.2	15.3	9.6	1.5	4.0	3.4	5.0	14.0	7.1
Tranquilizers[b]	14.8	5.4	13.5	13.8	6.9	21.1	15.9	15.6	6.2	9.7	11.8	6.9	18.9	13.6
Alcohol	94.8	86.9	92.3	91.5	82.0	95.2	90.8	94.2	83.8	86.8	87.0	72.2	90.2	84.9
Cigarettes	69.3	63.4	67.1	61.4	56.0	76.3	72.7	73.5	66.5	69.5	69.3	46.7	81.1	69.3

[a]Data based on four questionnaire forms. N is four-fifths of N indicated.
[b]Only drug use which was not under a doctor's orders is included here.

TABLE 18
Annual Prevalence of Thirteen Types of Drugs, 1980–1984 Data Combined
by Sex and Race

	Percent who used in last twelve months													
	White Male	Black Male	MexAm Male	PR&LA Male	Asian Male	Nat Am Male	Other Male	White Female	Black Female	MexAm Female	PR&LA Female	Asian Female	Nat Am Female	Other Female
Minimum N =	(31028)	(3866)	(741)	(526)	(599)	(506)	(982)	(31129)	(5093)	(739)	(578)	(540)	(431)	(811)
Marijuana/Hashish	48.8	42.5	52.8	35.1	28.5	52.6	47.0	42.6	31.3	39.4	25.1	19.5	47.2	38.6
Inhalants[a]	6.2	2.6	5.4	4.8	4.4	6.2	8.1	3.5	1.6	2.5	3.9	3.7	3.7	3.4
Hallucinogens	10.7	2.4	10.2	6.1	5.0	14.3	13.1	6.8	1.4	1.6	4.5	2.9	10.3	8.6
LSD	8.0	1.2	8.2	2.9	4.0	11.9	10.0	4.8	0.6	2.9	3.9	2.0	6.9	5.3
Cocaine	14.2	7.8	17.4	15.5	7.6	18.5	18.7	10.6	4.2	8.0	8.6	8.7	11.2	12.6
Heroin	0.6	0.8	1.1	0.3	0.6	2.2	1.9	0.3	0.4	0.9	0.0	0.1	1.1	1.2
Other opiates[b]	6.9	2.2	7.2	4.3	3.3	8.9	7.4	5.4	1.4	3.2	1.5	3.6	7.6	5.1
Stimulants[b]	23.0	5.9	21.9	9.4	9.6	25.7	21.6	26.3	5.5	18.0	9.6	12.1	27.4	18.1
Sedatives[b]	10.9	3.2	8.6	7.5	4.5	15.7	12.4	8.7	2.2	6.0	4.3	4.6	12.8	7.8
Barbiturates[b]	6.9	2.2	6.2	4.3	2.1	9.6	8.1	5.6	1.8	4.8	3.2	3.1	8.7	5.9
Methaqualone[b]	8.0	1.8	5.2	5.3	3.8	12.7	9.6	5.8	0.7	2.0	1.9	3.1	10.1	4.3
Tranquilizers[b]	8.2	2.4	6.9	4.9	2.6	11.6	8.0	8.1	2.5	4.8	5.6	2.5	8.2	7.1
Alcohol	90.6	76.5	85.9	84.6	75.7	89.2	86.2	89.2	68.4	78.8	76.6	64.4	82.2	75.6

[a]Data based on four questionnaire forms. N is four fifths of N indicated.
[b]Only drug use which was not under a doctor's orders is included here.

TABLE 19
Thirty-Day Prevalence of Fourteen Types of Drugs, 1980–1984 Data Combined
by Sex and Race

	Percent who used in last thirty days												
	White Male	Black Male	MexAm Male	PR&LA Male	Asian Male	Nat Am Male	Other Male	White Female	Black Female	MexAm Female	PR&LA Female	Asian Female	Nat Am Female	Other Female
Minimum N =	(31028)	(3866)	(741)	(526)	(599)	(506)	(982)	(31129)	(5093)	(739)	(578)	(540)	(431)	(841)
Marijuana/Hashish	33.1	30.6	38.3	23.1	16.1	40.7	35.3	26.0	20.8	21.9	15.7	12.1	31.9	25.5
Inhalants[a]	2.2	1.2	1.4	1.1	1.4	2.3	2.9	1.1	0.9	0.6	1.9	1.3	1.9	1.1
Hallucinogens	4.4	1.2	5.0	3.4	1.6	7.7	6.4	2.4	0.6	1.2	2.6	0.8	4.2	3.7
LSD	3.0	0.6	3.4	0.7	0.5	5.3	4.6	1.5	0.3	0.9	2.2	0.6	2.6	1.9
Cocaine	6.2	3.5	9.2	9.2	3.5	10.1	10.3	4.6	1.9	3.3	5.4	1.9	6.5	7.1
Heroin	0.3	0.4	0.8	0.2	0.2	1.1	1.2	0.1	0.2	0.5	0.0	0.0	0.5	0.9
Other opiates[b]	2.6	1.0	3.5	1.4	1.2	2.9	3.3	1.7	0.5	1.0	0.9	0.3	1.3	2.7
Stimulants[b]	12.1	2.9	11.3	4.8	4.4	14.8	11.6	14.5	2.9	9.3	5.7	6.7	18.6	12.3
Sedatives[b]	4.4	1.5	2.5	3.3	1.8	6.7	5.7	3.4	1.0	2.0	1.5	1.7	6.4	3.0
Barbiturates[b]	2.6	1.1	1.8	1.9	0.8	4.2	3.9	2.1	0.9	1.4	1.2	0.5	4.5	2.0
Methaqualone[b]	3.1	0.9	1.6	2.3	1.3	5.0	4.1	2.0	0.3	0.6	0.9	1.7	4.7	1.9
Tranquilizers[b]	2.9	0.9	2.6	1.7	0.7	5.1	3.0	2.6	0.8	1.6	2.6	0.4	3.8	3.2
Alcohol	77.8	55.1	71.0	65.7	51.0	75.8	72.9	70.6	39.4	54.1	49.4	36.2	64.5	55.2
Cigarettes	27.5	19.4	24.7	22.6	21.5	39.6	33.9	34.2	22.8	25.8	24.2	16.0	50.0	32.7

[a]Data based on four questionnaire forms. N is four-fifths of N indicated.
[b]Only drug use which was not under a doctor's orders is included here.

TABLE 20
Thirty-Day Prevalence of Daily Use of Three Types of Drugs, 1980–1984 Data Combined
by Sex and Race

	Percent who used daily in last thirty days													
	White Male	Black Male	MexAm Male	PR&LA Male	Asian Male	Nat Am Male	Other Male	White Female	Black Female	MexAm Female	PR&LA Female	Asian Female	Nat Am Female	Other Female
Minimum N =	(31028	(3866)	(741)	(526)	(599)	(506)	(982)	(31129)	(5093)	(739)	(578)	(540)	(431)	(841)
Marijuana/Hashish	8.8	5.7	9.7	5.2	2.8	14.6	11.7	4.0	2.8	2.2	4.0	2.0	8.7	4.8
Alcohol														
Daily	8.3	3.6	6.6	4.1	3.2	14.1	10.4	3.5	1.1	2.4	1.7	2.3	7.4	3.9
5+ drinks in a row/ last 2 weeks	54.1	24.9	49.7	36.3	24.1	59.2	50.3	34.6	11.3	25.1	19.3	10.1	39.1	26.2
Cigarettes	18.6	11.6	14.5	12.3	13.0	30.5	25.3	24.0	13.4	13.9	14.3	9.0	40.7	24.7
Half pack or more per day	13.7	4.7	6.4	6.1	6.0	23.8	19.3	15.8	5.2	4.2	6.7	1.9	25.5	17.0

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